An Evaluation of a Communicative Intervention Programme for Hearing Caregivers and their Deaf Children in a Developing Context

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DEDICATION

For the caregivers and families of young profoundly deaf children, and to all those involved in the management process.

It is hoped that the findings presented here will provide depth of insight into the issues involved in service delivery in a developing context, such that together we can encourage appropriate, effective intervention.

DECLARATION

I, Sharon Hurt, declare that the work on which this dissertation is based is my original work (except where the acknowledgements indicate otherwise). It is being submitted for the degree of Doctor of Philosophy in the University of Cape Town. Neither the whole work nor any part of it has been, is being, or is to be submitted for another degree or examination in this or any other university.

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Signed by candidate

Sharon Hurt

22/12/2005

Date

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ABSTRACT

This study set out to evaluate the effectiveness of an intervention programme, in a developing context within an ecological framework that involves parents through parent training adopting a parent-child interaction approach to intervention. This short-term, group intervention programme was developed specifically for hearing primary caregivers of profoundly deaf signing children from low socio-economic backgrounds. A naturalistic approach to intervention that followed a conversational model was applied. The programme was designed to enhance dyadic communicative interaction and to empower the caregivers as effective change agents, primarily through the programme components of communication skills and sign language, information and knowledge, educational advocacy and support. A broader perspective was adopted through addressing socio-economic factors and adapting to cultural differences. A team of people was involved in programme development, implementation and evaluation and included professionals from a range of disciplines, Deaf signing adults, and an English-isiXhosa interpreter. A short-term longitudinal, before-and-after group design was used in programme implementation and evaluation. This design encompassed constructivist-interpretive and positivist/post-positivist research paradigms. The group of sixteen caregiver-child dyads reported on in this study was its own control, constituting a quasi-experimental design. An estimate of the effect of the programme was determined by analysing pre-post-intervention comparisons of videotaped dyadic interactions during play and storytelling, and the post-intervention evaluation questionnaire and focus group interview data. A coding system was compiled for the investigation of communication and sign language parameters that were not part of an occurrence of communication breakdown. Investigation of breakdown and repair as well as aspects of caregiver sign production constituted a separate analysis. Both quantitative and qualitative analyses were carried out in the evaluation process and certain procedures were adopted to enhance the reliability and validity of the findings. It is believed that the aims of this study and the specific goals/objectives of the programme were met. The analyses carried out indicated positive change and that this change was most likely due to the programme. In particular, it is believed that the style of caregiver-child interaction changed over the course of the intervention and so the programme was effective to the degree that it improved caregiver-child communicative interaction. More so, it is believed that the programme resulted in empowerment of the caregivers. Numerous aspects are believed to contribute towards the uniqueness of this study and of the communicative intervention programme. The numerous clinical and theoretical implications and implications for future research arising from this study are discussed in detail.

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CHAPTER ONE:
INTRODUCTION

"Early intervention efforts that focus on the child's caregivers recognise the central importance of parents for the health, well-being, and development of the infant and young child" (Seitz & Provence, 1990:400).

The purpose of this study was to conceptualise, design, implement and evaluate a communicative intervention programme for hearing caregivers[1] of young deaf[2] signing children from socio-economically disadvantaged communities. This study was undertaken in the Western Cape of South Africa.

Both the importance and the reciprocal nature of early caregiver-child interactions are frequently highlighted in studies on caregiver-child interactions. Parents have been pinpointed as the prime facilitators of language development in young hearing-impaired children (Watkins & Clark, 1988; Wolf Nelson, 1998). Furthermore, parents play a vital role in developing their child's communication skills throughout their child's pre-primary and primary school years. The parent-infant relationship is one of inherent and critical social-affective dimensions. It is primarily the interactive experiences between parent and child occurring naturally within the home that assist the child in developing his/her worldly understanding and in acquiring language that s/he can use to understand important cognitive concepts (Moeller & Carney, 1993). The social interaction within the family is the critical foundation for the acquisition of language and literacy (Moeller & Carney, 1993).

[1] The term 'caregiver' refers to the person who has primary responsibility for the child in terms of care and nurturing. In this thesis, this term is used interchangeably with 'parent' and 'mother'. The term 'caregiver' is preferred in this study since the family structure in many traditionally under-served families tends to be extended, rather than nuclear and may also be multigenerational. Consequently, the mother may not necessarily be the primary caregiver (Louw & Avenant, 2002).

[2] The term 'deaf', as used in this study refers to deaf persons in general who have a severe to profound hearing loss present from birth or before two years of age. Such persons have extreme difficulty in naturally acquiring spoken language without special and intensive educational support and systems of amplification. Use of a formal signed system of communication is a viable option. The term 'Deaf' is used to refer to the deaf signing children and adults participating in this study who use sign language as a primary mode of communication, and to refer to a Deaf community and Deaf culture. The term 'hearing-impaired' is used with reference to previous research in which this term was employed or in which the severity of hearing impairment was not specified.

The parent-infant dyad may then be viewed as a prototype of the teacher-learner partnership (Koester, 1992). This notion is worth noting considering that deaf children are often unable to participate in the institution that has the responsibility for teaching the skills necessary for living in society – the family. The course and durability of caregiver-child interaction is challenged by the presence of a severe auditory impairment (Rea, Bonvillian & Richards, 1988).

Approximately 90% of deaf children are born to hearing parents (Christensen, 1988; Newport & Supalla, 1998). Communication breakdown is commonly reported in interactions between hearing caregivers and their young deaf children (see Koester, 1992; Wood, 1991). One of the greatest tasks facing these parents in their child's life is overcoming the tremendous communication barrier that exists between them (Gregory, 1995 in Joseph & Alant, 2000). Deafness renders spoken language inaccessible in the normal manner. This, and the fact that such a large number of children are born to hearing parents, has far reaching implications for numerous aspects of development including language acquisition, familial and social relationships, and access to information and education. Deaf children face a multitude of communication, social and educational barriers in their daily lives (Wallis, Musselman & MacKay, 2004).

The International Classification of Functioning, Disability and Health (ICF)[3] refers to deafness as an impairment of body function that can result in a disabling condition in terms of activity limitations and/or life participation restrictions as a consequence of environmental factors. Life domains include for example, communication, interpersonal interactions and relationships, and general tasks (World Health Organization, WHO, 2001a).

[3] The International Classification of Functioning, Disability and Health was approved by the World Health Assembly, May 2001, for international use. It supersedes the International Classification of Impairments, Disabilities and Handicaps of 1980 and its revised versions (World Health Organization, 2001a).

Current perspectives on deafness

As a result of the existence of varying interpretations of disability, conceptual models of understanding disability, namely the medical and the social models, have emerged. To date in the developing context of South Africa, services for disabled people have been based on the premise that disability is an individual pathology and the disabled person is seen as having a problem to be corrected. The development of this **medical** viewpoint led people to believe that dysfunction can be explained through rational scientific argument; that is the cause of any condition regarded as abnormal can be attributed to the malfunction of a physiological system. Subsequently, disability as malfunction has been seen as a specialized health problem and an emphasis has been placed on clinical diagnosis. The aim of medical rehabilitation is to assist the individual to be as 'normal' as possible (Philpott & McLaren, 1997), changing the individual to fit into society (Jagoe, 2002). Medical care is clearly regarded as the main issue, and at the political level the primary response is that of modifying or reforming health care policy (WHO, 2001a).

One of the criticisms of the medical model is that it focuses primarily on the impairment and secondarily on the individual who bears it, and only minimally on the social and physical impairment. Hence this model contributes to the exclusion of disabled people from society (Philpott & McLaren, 1997; South African Federal Council on Disability, 2002). In this model, the professional is the 'expert', the controller of knowledge who decides on the needs of the disabled person (Jagoe, 2002; Philpott & McLaren, 1997). The disabled person is regarded as the client or patient who is a passive recipient of the particular service. Disabled people internationally, challenge society to acknowledge that they too are experts in the field of disability (Jagoe, 2002).

In contrast to the medical model, the **social** model of disability views the medical condition as only a part of the so-called problem. Rather, acknowledgement is made of the causal nature of problems faced by the disabled of the way that the society is organised to meet the needs of the non-disabled people (Philpott & McLaren, 1997). The social model sees disability as a human rights and development issue (South African Federal Council on Disability, 2002). This model "sees the issue mainly as a socially

created problem, and basically as a matter of the full integration of individuals into society" (WHO, 2001a:28). According to this view, disabled people experience unnecessary segregation and exclusion because of factors such as discriminatory attitudes and practices. Consequently, disabled people are an oppressed and marginalised group in society (Philpott & McLaren, 1997). The issue is an attitudinal or ideological one that requires social change, which at the political level becomes a question of human rights (WHO, 2001a).

On the basis of the social model, since disability is not an attribute of an individual but a complex variety of conditions that are primarily created by the social environment, intervention is not primarily focused upon the individual in trying to bring about cure or care. Rather, social action is required and intervention involves the removal of barriers that prevent optimal participation for disabled people in society (Philpott & McLaren, 1997; WHO, 2001a). The ICF is based on an integration of these two opposing models (WHO, 2001a).

In line with the medical and the social models of disability are the pathological and the socio-cultural perspectives on deafness respectively. In short, the pathological view of deafness is premised on the idea that deaf people are not only different from hearing people, but there is also a sense of their inferiority on a physiological level. Attempts are made to remediate the auditory deficit. The socio-cultural view operates from an anthropological rather than a medical perspective, suggesting that for some deaf people, deafness is understood as an essentially cultural condition. This view has led to efforts that focus on issues of civil rights and that assist deaf people to function fully in the dominant culture. It has gained increasing credibility and support in recent years (Reagan, 1996; Penn, Ogilvy & Reagan, in process).

A shift in approaches to intervention

Of relevance to the medical and social models of disability and the pathological and socio-cultural views on deafness respectively, is the change in focus of early intervention efforts. A paradigm shift has occurred over the past twenty years from near exclusive

attention, to centre-based child focused interventions, to service delivery models that consider the broad context of factors that influence development. In early intervention, the most important relational and contextual factors are likely to involve aspects of the family as well as external factors that influence family functioning. Hence, the result of the paradigm shift has been a greater emphasis on families in the intervention process (Crnic & Stormshak, 1997). A greater focus has therefore been afforded to a social model and a socio-cultural perspective in intervention.

The shift in service delivery models towards more **holistic** approaches to intervention has been concurrent with the shifts in theoretical views of child language (Ogilvy, Hurt, Commerford, Brown & Dyabuza, 2001). It has become apparent that language acquisition requires joint problem-solving by parent and child. In the past, a trainer-oriented approach where the clinician chooses specific language goals and controls the teaching process was believed to be an effective approach with children who are language or developmentally delayed in terms of their communication. Intervention programmes are now designed to encourage the child's entry into dialogue and learning by training parents to acquire conversational styles that are contingently responsive to the child's actions and utterances (Girolametto, Greenberg & Manolson, 1986).

Similarly, intervention programmes for young hearing-impaired children have progressed from being child-centred to focusing on the parents and/or the family (Bailey, Buysse, Edmondson & Smith, 1992). A great number of advantages have been proffered for involving caregivers in their children's communicative intervention (Ritter-Brinton & Stewart, 1992). Consequently, deaf children and their (deaf or hearing) caregiver/s stand to benefit from a stronger family focus in service delivery systems.

Communication modality – The need for sign language

Of great importance in services for deaf children is communication modality. The degree of hearing loss is a strong indicator of the need for communication through an alternative modality to speech. According to Bornstein (1990) the degree of the loss and the age of onset are both central to the communication needs of the child, and influence the nature

and quality of the language input received. The literature in this area provides evidence of children using sign language as a primary mode of communication, who present with a hearing loss of 70dB or more - severe to profound loss (see Bornstein, 1990; Calderon & Greenberg, 1997; Paul, 2001). These children experience tremendous difficulty in using and understanding speech (Bess & Humes, 1995 in Joseph, 1998).

The majority of children with severe to profound hearing loss are connected to a world of vision in which they rely upon some form of signing to receive and express information (Paul, 2001). "Sign language is the language of eyes and hands, of movement and of space" (Penn, 1993:11). This visual-gestural medium through sign language is believed to be an appropriate form of communication for children with a severe to profound hearing loss who receive restricted or no useful benefit from amplification. Hence, there is a need for the use of sign language by this population.

Since parents play such a critical role in their children's development of language and communication, hearing parents of deaf signing children need to learn sign language. Without signed communication these parents are unable to fulfil their role as mediator for the child and unable to develop intimate parent-child relationships.

Difficulties involved in learning sign language

Those deaf children who need to communicate in sign language are often unable to communicate effectively using this medium within the home, and hence serious consequences on familial relationships, academic success, and the social and cultural well being of the child are inevitable. According to Lampropoulou and Konstantareas (1998) deaf children require longer periods of adult intervention due to their communication differences/difficulties, than do children with other disabilities, which in turn causes greater stress for parents. Some of these communication difficulties may be attributed to the impoverished language model received by these children compared to their hearing counterparts, resulting in a language environment not conducive to the deaf child's linguistic development (Spencer, 1993). Adults often modify their language in view of their efforts to incorporate sign language. Parents have been found to simplify their

language input, consistent with their level of signing skill. However, when parents consistently reduce the complexity of their input, the child is exposed to a language model that lacks richness (Newton, 1985).

As reported by Cohen (1996 in Joseph & Alant, 2000), the signing skills of parents in regions of South Africa is low. Hearing parents frequently receive little formal training in sign language, and have been reported to feel uncomfortable using the language in public, using sign language only when communicating in private with the child (Vaccari & Marschark, 1997 in Magnuson, 2000). Limited signing skills may thus contribute greatly towards impeding communication between the hearing caregiver and severe-profoundly deaf child.

Luterman (1987) states that most hearing parents do not develop sufficient signing skills to communicate adequately with their children. There is a general trend that deaf children in signing programmes tend to sign more than their mothers while the mothers tend to speak more than their children in dyadic interactions. The reliance on speech as a primary mode of communication with the deaf child may negatively influence parent-child interaction, interfere with the bonding process and communication, and consequently have long term implications for the child's linguistic, emotional, educational and cognitive success (Joseph & Alant, 2000; Bess & Humes, 1995). Parents learning to sign need to make an investment in terms of time and effort that they are often unwilling and/or unable to make (Bornstein, 1990 in Joseph & Alant, 2000).

Inadequate signing proficiency of hearing parents living within a socio-economically disadvantaged society can be attributed to numerous factors. Commonly reported barriers include the distance from the particular training venue; transport problems; time constraints due to employment and family responsibilities; language difficulties in terms of a spoken language used in training that is not the first language of the parent; lack of involvement in a signing environment; and the lack of resources (Swisher & Thompson, 1985; Cohen, 1996; and Lynas, 1994 in Joseph & Alant, 2000). These factors are believed to play an influential role in the South African context.

Communicative interaction with the deaf child

In addition to the need for training in and the use of sign language in parent intervention, the researcher acknowledges the critical need to address communication skills. Parents have innate skills to communicate with their children but these skills of hearing parents are usually thwarted by the presence of the child's deafness. In particular, pre-linguistic skills such as turn-taking, attention-getting, and visual attunement are likely to be affected and hence result in frequent communication breakdown. In agreement with Swisher and Christie (1989), parents need to be made aware of their children's visual requirements and of ways in which their own behaviours may be hampering communication. Difficulty in communication is not simply a matter of skill in manual communication (Swisher & Christie, 1989). In agreement with Lederberg and Prezbindowski (2000), it is argued that intervention needs to identify and support intuitive parenting behaviours as well as provide additional training on aspects of communication that may be less intuitive to hearing parents yet essential for communication with deaf children.

Minimal meaningful communication strongly suggests that deafness introduces a uniqueness as well as complexities into a context of disablement. In support of Marks (1997), deafness becomes disabling in a family and community that does not recognise or make use of sign language. From a socio-cultural perspective, the convention of referring to sign language users as 'Deaf' signifies their membership of a socio-cultural and linguistic community rather than merely being a category of impaired individuals (Marks, 1997; Penn, 1993).

In agreement with Seitz and Provence (1990), the role of the professional is to support the child's caregivers by utilising their skills and knowledge related to health and development and by realising the importance of the family for the child's physical, emotional and intellectual growth. Professionals are however often unsure of the specific attributes of an intervention programme or of the broad child and family factors influencing the success of programmes for deaf children and their families (Calderon & Greenberg, 1997 in Calderon, Bargones & Sidman, 1998).

It follows that hearing parents of young deaf children need support and training regarding communication through the modality of sign language.

Rehabilitation in the context of a developing country

A segment of the South African society has become socially isolated and their status is characterised by joblessness and lack of opportunity (Wacquant & Wilson, 1989 and Wilson, 1987 in Quane & Rankin, 1998). Poverty in South Africa is directly linked to the political economy of inequality of the Apartheid regime. This is a country in which wealth and power has historically been the preserve of a racially defined minority (Vally, 1998). Excluding this minority, the impact of the Apartheid regime does not simply imply a lack of financial resources. Rather, it introduces an inevitable vulnerability to issues relating to the family (e.g. stress and coping), environment (e.g. poor housing and sanitation), health (e.g. illness, impairment), services (e.g. access to health care, transport), education (e.g. access), and the political and economic climate. Social and economic needs for these people far outweigh medical needs. However, disability[4] is generally unrecognised as a component of social and economic issues (Groce, 1999). Economic factors cannot be disregarded when discussing intervention programmes for children (Chaudhury, Menon-Sen & Zinkin, 1995).

As noted by Groce (1999), those with disability are among the poorest and most marginalised in the world, who are generally denied adequate health care, education, employment and social equality. There is thus an inextricable link between poverty for those with a history of disadvantage, and disability, which cannot be disregarded in intervention services for deaf children and families from low socio-economic backgrounds.

[4] The researcher believes that deafness only becomes disabling to individuals when their surroundings fail to recognize their language or culture. The term 'disability' in this study refers to an auditory impairment that brings about a disabling condition for the child, who has limited access to an appropriate language, and who is faced with restrictions in participation in communicative interaction with hearing individuals. This definition is based on the International Classification of Functioning, Disability and Health (ICF, World Health Organization, 2001a).

The South African health care context has a history of segregation and limited resources for the majority of the population. Philpott (1995) describes the maldistribution of health services and resources in favour of the urban elite at the expense of the poor. Most children with disabilities live in extreme poverty with little or no access to appropriate health and rehabilitation services (Anderson & Phohole, 2000). Access difficulties are encountered primarily due to the necessary transportation costs. Traditionally disadvantaged people typically need to travel long distances due to geographic location as a result of apartheid. Socio-economically disadvantaged people with disabilities are dependent on strained public health services (Guthrie & Sait, 2001).

Transformation within the health sector has led to the promotion of a primary health care (PHC) approach in view of the needs of socio-economically disadvantaged communities. However, PHC services are almost non-existent to most disabled, socio-economically disadvantaged people who live in rural or peri-urban settings, as their needs are catered for at district level. The PHC approach is in fact failing to provide rehabilitation services at a district level to disadvantaged people in need of these services and community based rehabilitation is not seen as a viable alternative for addressing some of the needs (Guthrie & Sait, 2001). To date, rehabilitation has taken a back seat while the focus has been on curative medicine. Sadly, the transformation process is currently characterised by a system that is sorely lacking in rehabilitation services for disadvantaged families.

The Department of Health (2001) documented the situation regarding rehabilitation programmes as characterised by poor government commitment to the support and development of rehabilitation programmes and human rights issues that affect people with disabilities. Government and non-government sectors are implementing new strategies and programmes congruent with the transformation process in health and education and in the drive to address past inequalities in the availability of rehabilitation services for the majority of disabled people.

Even at a tertiary level of health care, rehabilitation services for hearing impaired and deaf children are severely limited. To date, there is no provision in the formal health

budget for hearing impaired and deaf children who may benefit from amplification. Moreover, little is offered for children requiring sign language to communicate. More specifically, South Africa continues to face a great number of challenges in the provision of formal, appropriate and effective intervention programmes for hearing parents of young deaf children, from disadvantaged communities, who use sign language[5] as a primary mode of communication.

The lack of rehabilitation services for deaf children and their hearing families may also be attributed in part, to a lack of research in this area. To date, little research has been conducted in South Africa on the involvement of hearing caregivers of deaf children from socio-economically disadvantaged communities either in early or in long-term intervention programmes. Moreover, research is limited in terms of the use of sign language to communicate by families from disadvantaged communities. This includes families for whom the home spoken language is not English. Reilly and Bellugi (1996) point out that the majority of motherese studies have focused on middle- and upper-middle- class English-speaking families. Thus, existing knowledge of parentese and its role in language acquisition is almost entirely based on research from spoken language and how hearing parents of a particular socio-economic status and home language communicate with their hearing children.

By implication of this absence of formal rehabilitation services in the public sector, hearing families of deaf children from socio-economically disadvantaged communities are not able to receive direct support.

Against this background, there is a dire need for formal intervention, and moreover early intervention, for deaf children and their hearing parents.

[5] Sign language as it applies to the research project of this study refers to South African Sign Language (SASL). The South African constitution does not recognize SASL as an official language but sign language is afforded special recognition by the Pan South African Language Board as a language that needs to be promoted in its development and use (Constitution of the Republic of South Africa, 1996). The South African Schools Act recognizes sign language as an official language for educational purposes (DEAFSA, 1997 in Joseph & Alant, 2000). In recent years, a bilingual approach to deaf education has emerged and is being promoted (Joseph & Alant, 2000). For a comprehensive history of sign language development in post-apartheid South Africa, refer to Penn, Ogilvy and Reagan (in process).

The study

The researcher acknowledged the dire situation at the commencement of this study regarding a lack of intervention services. Consequently, the population under investigation includes those hearing caregivers and their deaf children from socio-economically disadvantaged communities for whom access to appropriate services is limited and who have had no previous exposure to formal rehabilitation intervention. Private services cater for those who are better off financially, who are mainly White, whereas the poor, who are mainly Black and Coloured people[6] (of the Western Cape) are dependent on strained public services (Committee of Inquiry, 2002). In addition, these deaf children require sign language as the primary mode of communication primarily in view of a lack of financial resources to pursue the oral mode of communication.

Hence, the primary **rationale** for conducting this study was the lack of formal intervention programmes that are appropriate for deaf, signing children and their hearing parents who have a history of socio-economic disadvantage. In this way, the study was primarily clinically driven.

The **primary aim of this study** was to determine the effectiveness of a formal, communicative, training programme that was designed to empower hearing caregivers of young deaf children who use sign language as a primary mode of communication, and to enhance the dyadic communication. More specifically, the **aims** of the study were firstly to determine programme effectiveness within a developing context as the programme was suitable for socio-economically disadvantaged caregiver-child dyads and secondly, to determine effectiveness using multiple measures in an evaluation process. The programme was developed, implemented and evaluated within an ecological framework. Individual caregiver-child dyads who have received no previous exposure to formal rehabilitation intervention, participated within a group intervention programme, primarily for the support available from Deaf role models and caregivers experiencing similar

[6] In accordance with Statistics South Africa (1998) classification of people into population group is no longer based on a legal definition, but rather on self-classification, since moving away from past Apartheid discrimination.

circumstances. The programme constituted a short-term intervention programme of three months with a view to the need for more long-term intervention.

The core principles of the programme included caregiver-child interaction; competence of a comprehensive team; cultural competence; consideration of the social and environmental context; a working partnership; involvement of Deaf adults; empowerment; continuity of care; and development of appropriate resource materials.

The researcher developed the communicative intervention programme primarily on the basis of needs identified during clinical work in the field within primary and secondary/tertiary settings, on theoretical models and in the context of applicability. All participants were from socio-economically disadvantaged communities in the Western Cape of South Africa and representative of the Black and Coloured population groups. The first language of the caregivers was isiXhosa and a combination of English/Afrikaans, respectively. Central to the intervention programme was an acknowledgement of the need for linguistic accessibility of the caregivers. Thus, an interpreter was employed to play a critical role in this study. The children were required to be between the ages of one and five years at the start of the study.

A before-and-after design of an observational nature was employed in the implementation and evaluation of the programme. Both quantitative and qualitative data analyses were undertaken regarding communicative transaction and interaction. An evaluation questionnaire and focus group interviews yielded additional qualitative data. Thus, a large amount of quantitative and qualitative data contributed towards the evaluation process. Ethical considerations are highlighted in this study in terms of the need to employ a quasi-experimental design.

The researcher was motivated by some recent **conceptual shifts** that have occurred in the field of rehabilitation. These shifts primarily relate to cultural appropriacy, empowerment within an ecological perspective, and the need for formal evaluation.

Not only is there a need for rehabilitation services for low socio-economic status families of deaf children, but also that such services within this context be more **culturally appropriate**. Factors relating to the multilingual, multicultural nature of the South African populace (Erasmus, 1999) exercise a strong influence in service delivery. In this post-apartheid period, multiculturalism and multilingualism are emerging and being promoted but the reality of the transformation of the existing health care system is a long and tedious process. As noted by Evans (2001), overt disadvantage owing to race has been replaced by covert disadvantage owing to linguistic and cultural barriers. The absence of a common language among professionals and patients/clients in health care is very much a part of everyday experience (Drennan, 1999). More recently, the field of Speech-Language and Hearing Therapy has placed much emphasis on the need for culturally and linguistically appropriate services. Cultural and linguistic accessibility may be achieved either through collaborative involvement of interpreters or through the use of professionals who represent the same cultures as those participating in the intervention. In line with this shift, cultural appropriacy was incorporated in the programme principles of this study. An isiXhosa/English interpreter played a key role and the involvement of Deaf adults in all stages of the development, implementation and evaluation of the programme was emphasised from the outset of this study.

A shift in cultural appropriacy was among numerous factors that highlighted for the researcher that deafness cannot be viewed in isolation in a study of this nature but that a broader perspective is necessary. The intervention was conceptualised by means of drawing on important issues pertaining to deafness (mainly language and communication), to culture, to social and economic factors within an **ecological framework**. The ecological perspective adopted considers the relationship between the child and his/her caregiver and factors in their environment, as the caregiver-child dyad experiences them. In agreement with Crnic and Stormshak (1997) intervention needs to consider both relational and contextual factors if it is to be successful. Hence, implementation and evaluation of the programme aimed to be culturally and linguistically responsive to hearing caregivers of deaf children from low socio-economic communities who have a history of disadvantage in terms of health and education.

It is believed that this approach to intervention responds to the dire need to tailor services towards considering cultural issues, the social and economic context and issues of deafness. Such a holistic approach necessitates an ecological framework within the developing context of South Africa that incorporates components of language and communication, information, support and educational advocacy that serve to empower the caregivers of young deaf children.

With regard to an overall **empowerment perspective**, the apartheid education system attempted to promote inequalities, actively encourage passive acceptance and discourage investigation and curiosity, and the majority of non-White adults received a substandard education (Abel, 1997). The past discriminatory educational practices for the parents of children with disabilities imply a lack of knowledge and hence disempowerment. A lack of knowledge coupled with a sense of disempowerment in a low socio-economic context has implications in terms of early identification of deafness and of rehabilitation. The communicative intervention programme of this study was not simply a programme to be delivered to enhance language and communication development. The programme was also designed to empower caregivers by providing them with the necessary skills, knowledge, support, and information.

The lack of rehabilitation programmes, as already highlighted, implies a lack of evidence-based practice information. **Formal evaluation** of existing strategies and programmes in the context of transformation in South Africa is scarce (Department of Health, 2002). In particular, there is a lack of evidence-based data highlighting the effectiveness of programmes for deaf children and their hearing families (Department of Health, 2002). It is believed that such data would be particularly useful if collected on the basis of pilot and follow-up programmes that were delivered and evaluated.

This study was conducted in line with current trends and shifts in measuring the effectiveness of intervention. According to Rossi and Freeman (1993:3) the aim of evaluations is to "provide the most valid and reliable findings possible within political and ethical constraints and the limitations imposed by time, money, and human resources". Communicative transaction and interaction, and issues relating to programme

components were examined in an inherent evaluation process that involved the use of multiple measures namely, a video analysis procedure, a caregiver evaluation questionnaire and focus group interviews. The dire need for the evaluation of programmes, particularly those serving disadvantaged communities, in the South African context has been highlighted. Furthermore, the qualitative findings reported in this study respond to the lack of information and studies, according to The Disability Action Research Team (2000), on qualitative aspects of disability.

In addition to these conceptual shifts, there were two primary **considerations** necessary in this study that relate to the concept of early intervention and to a centre- versus a community-based service. With a history of disadvantage and a lack of services, the researcher acknowledged the need to shift out of an **early intervention** framework in its true sense. 'Early intervention' is considered as any service that is initiated prior to 36 months of age that aims to improve the development of the child who has a disability, is at risk or is otherwise disadvantaged (Pakula & Palmer, 1997). The researcher acknowledges the importance of formal, early intervention. However, due to the scarcity of rehabilitation services, the intervention of this study aimed to provide early intervention in the sense that the service is appropriate for caregiver-child dyads that have had no previous exposure to formal intervention. Inclusion of children older than three years of age who have not started formal schooling therefore relates to the need for intervention for those with a history of disadvantage. This history of disadvantage interfered with their participation in any previous early intervention programmes.

Moreover, service provision in the communities of the deaf children and their parents may be viewed as the optimal situation, with advantages such as minimising problems of physical accessibility. However, in spite of the researcher's acknowledgement of the need for the intervention to be provided at a **community level**, the intervention of this study was initially provided and continues to be **centre-based at a tertiary level**.

This intervention formed an additional service to the existing outpatient rehabilitation service (e.g. hearing testing, counselling and hearing aid fitting for children diagnosed with a hearing loss) within a tertiary hospital setting. The intervention enabled a more

comprehensive service through a greater family and interaction focus. More recently, long-term family intervention has been formally introduced in the homes of the families, to provide continuity of intervention (see Commerford, 2003).

The caregiver-child dyads participating in the intervention programme lived in different areas across a wide geographical region. Hence, it would have been necessary to establish multiple intervention sites, which in turn may have influenced the implementation of group intervention. Since the commencement of this study, the context of the problems faced in the transformation process appeared to be a tremendous challenge. Implementation and evaluation of the intervention of this study was to continue at a tertiary level until such time as a greater focus on rehabilitation existed, problems in health service delivery to socio-economically disadvantaged people were addressed further, and the planning and networking necessary to implement in other settings was carried out.

Hopefully, more long-term intervention services can be offered in the community of the deaf children and their families.

It is also believed that an early intervention service for deaf children and their parents who have no previous exposure to formal intervention needs to be multi-disciplinary in nature. That is, it needs to be comprehensive in nature, acknowledging the complexities involved in first-time diagnosis and early rehabilitation in a context of socio-economic disadvantage. The intervention of this study was therefore centre-based at a tertiary level with input from a multidisciplinary team of professionals. Rehabilitation for hearing impaired and deaf children has a unique status in that it is a cross-disciplinary area of service provision provided by a range of professionals with specialised skills who deliver a comprehensive service (Cherow, 1984).

The **scope of this study** has numerous applied/clinical and theoretical aspects. Some of the major implications that may emerge from this study are as follows.

It is hoped that the development of a communicative intervention programme for hearing parents of deaf children will have numerous clinical implications. For those hearing parents and families of deaf children who use South African sign language, having early and consistent access to effective learning opportunities in this language is critical. Moreover, the evaluation of programmes designed for parents through parent-child interaction, which support the learning of sign language as well as identify effective teaching/learning strategies, is believed to be essential. It is hoped that the intervention programme will continue to be implemented and evaluated in the future. Since the programme was a short-term intervention specifically for dyads with no previous exposure to formal intervention, it is also hoped that this study will lead to the development and evaluation of more long-term intervention programmes.

It is believed that the programme that was compiled for a developing context will be applicable for other developing regions and countries.

Moreover, acknowledgement of the broader context, including socio-economic and cultural aspects, that impact on the lives of the parent-child dyad, as opposed to focusing solely upon language and communication relating to the child's deafness, is believed to be critical. The development of a formal communicative intervention programme for caregivers and their children from low socio-economic status communities and from cultures that differ from that of the programme co-ordinator, is believed to have numerous implications for service delivery in light of the dire need for a programme of this nature.

With regard to clinical tools, it is believed that the contingency coding system that was compiled and used in this study can be applied in clinical use. In this study, the coding system allowed for in-depth comparisons pre- and post- intervention of sign language and communication parameters relating to transaction and interaction for the caregiver-child dyads. It is anticipated that the coding system can be modified for clinical use as an effective tool in monitoring and evaluation.

Hopefully, the numerous programme materials regarding language and communication development and sign language will be useful beyond this intervention programme. The materials allow for user-friendly resources in this field of intervention for English, Afrikaans and isiXhosa members of disadvantaged communities. They may also be used to contribute towards a more enabling environment for the deaf child, thereby creating awareness regarding communication through sign language.

With regard to theoretical implications, it is hoped that this study will provide additional knowledge to the existing body of knowledge on the nature of communicative transaction of hearing caregivers of young deaf children and of interaction between the caregivers and their children. More specifically, the findings may provide insight into aspects of sign language, caregiver acquisition and use of sign language, and communication breakdown between caregiver and child. This type of information, collected on the basis of an inherent evaluation process, is not only valuable in the areas of communication and language in the field of child deafness and intervention. Such information also meets the need, among others, for the lack of research on the nature of sign language use of caregivers from low socio-economic backgrounds receiving their first, formal signing intervention. Furthermore, it is believed that the findings may highlight important aspects of early communicative interactions, thereby indicating some critical communication components that are necessary in intervention programmes.

Finally, the findings of this study may well contribute towards a greater understanding of disability in terms of restricted participation for the severe-profoundly deaf child in communication within a hearing, speaking environment.

1.1 DESCRIPTION OF CHAPTERS

Chapter Two focuses on meeting the need for parent-child communicative intervention. Traditional approaches and a parent-child interaction approach to intervention are described, highlighting the need for and benefits of caregiver involvement and training. Rehabilitation services in the developing, South African context are outlined and the need for sign language as the mode of communication is highlighted. Contextual factors

believed to have a tremendous impact on the development, implementation and evaluation of programmes for hearing caregivers and deaf children from traditionally disadvantaged communities, receive further mention. An approach to intervention as well as important factors to be addressed in this context that is suitable for caregiver-child dyads from socio-economically disadvantaged communities, are presented as a backdrop to the development, principles, aims, nature and components of the programme of this study that are discussed in Chapter Four. The approach to intervention that is proposed not only involves caregivers, but focuses on parent-child interaction within an ecological perspective. Critical factors that are believed to impact on child development and caregiver-child interaction include those of culture and the socio-economic climate.

Chapter Three presents the nature of hearing caregivers' input to and interaction with their young Deaf children. The importance of parents in the development of the child's language and communication ability is highlighted. Areas in which hearing caregiver-deaf child dyads experience problems relating to input and interaction, which result in frequent communication breakdowns, are discussed. It is proposed that hearing caregivers of deaf children who use sign language as a primary means of communication require sign language training in addition to support regarding intuitive communication behaviours and training in those behaviours that are less intuitive but necessary in interaction with young deaf children. Hence, the need for intervention is highlighted. Positive interactions between deaf parents and their deaf children strongly suggest the use of deaf-deaf dyads as role models.

Chapter Four concerns the methodology of this study. The aims, research design, subject sample, data collection and analysis methods, and the methods and measures of programme effectiveness are described. Since the focus was on language and communication, the identification of parameters of the coding system and the use of the coding system, are described in detail. This chapter describes the communicative intervention programme that is compiled, implemented and evaluated in this study. The development, principles, aims, nature, service delivery components, content and process of the programme are presented. In addition, factors relating to programme effectiveness are considered. In line with characterising relationships between individuals and their

environments as transactional, and the influence thereof on development, the programme adopts an ecological perspective, which involves a naturalistic approach whereby children learn language and communication skills through naturally occurring interactions with their caregivers. Moreover, an ecological perspective is applicable to the South African context as it considers the family system, culture, empowerment, and a working relationship between professionals and the caregivers that participate in the intervention. Finally in this chapter, a brief overview of the pilot study on dyadic interaction presents some of the major modifications of the methodology that were necessary.

The findings of the study including the effectiveness of the intervention are presented and discussed in Chapters Five and Six. Chapter Five presents the results of the analysis of communication and sign language pre- and post- intervention. Chapter Six presents the qualitative findings of the thematic analysis of measures of evaluation implemented post-intervention. A general discussion is undertaken in Chapter Seven, which includes numerous conclusions and implications pertaining to this study.

CHAPTER TWO:
MEETING THE NEED FOR CAREGIVER-CHILD COMMUNICATIVE INTERVENTION

"The early interventionist is faced with many challenges in order to provide effective and accountable services to clients in the diverse South African context" (Louw & Avenant, 2002:149).

It follows from the previous chapter that hearing caregivers of young profoundly deaf children need support and specific training in communicative transaction and interaction. Hence, an intervention programme is required that aims to improve the effectiveness of overall communication ability through direct involvement of caregivers. It is however critical to compile, implement and evaluate a programme that is suitable for the particular caregivers and their children in a particular socio-political, economic and cultural context.

This chapter presents two contrasting approaches to intervention for deaf children, provides an overview of rehabilitation services in the developing South African context, and proposes a particular approach believed to be suitable within this context. In addition to aspects of language input and communicative interaction presented in Chapter Three, this chapter ultimately serves to introduce the issues considered in the development of the communicative intervention programme of this study, its principles, aims, nature and components. Chapter Four provides further information on the programme.

2.1 Approaches to Intervention

Historically, professional attitudes and ideologies in the area of parenting deaf children seem to have developed around the parents' desire to somehow make their 'deviant' child 'normal' (Harvey, 1984 in Henderson & Hendershott, 1991). According to this ideology, the family is hearing and the deaf child is deviant. This assumption is not valid when a family systems perspective is used. That is, since the deaf child is a component of the family system, the deafness belongs not only to the child but rather to the entire family.

Acceptance of a family systems perspective among professionals makes it necessary for the family to ensure that all of the components in the family system can participate, contribute and draw on the family's resources equally (Henderson & Hendershott, 1991).

As noted by Henderson and Hendershott (1991), the social stigma that surrounds deaf people and their language has prevented hearing people – parents and professionals – from looking at this issue from a combined hearing and deaf perspective. Consequently, the development of what is considered normal, healthy caregiver-child interaction is influenced.

This section contrasts the traditional child-focused, directive model and the parent-child interaction model of intervention as a means of presenting the backdrop for the intervention programme of this study. In this way, positive aspects of interaction are illustrated as opposed to merely focusing on negative aspects. Several advantages of the adult-child communicative interactions will be presented and the need for caregiver involvement, particularly in the intervention process, will be discussed. The importance of training hearing caregivers of deaf children in order to enhance caregiver-child communicative interactions will be highlighted.

2.1.1 Child-focused and parent-child interaction models of intervention

Traditionally, models of intervention comprised a child-focused approach in which the interventionist functions as the key agent of change and there is little, if any, emphasis on enhancing or supporting parent-child interaction – that is, relationship-focused concepts – in the intervention practice (Mahoney, Boyce, Fewell, Spiker & Wheedan, 1998). In contrast, it is proposed that caregivers be directly involved in the intervention process, which comprises caregiver-professional collaboration, and supports and enhances responsive caregiver-child interaction. In this way, the approach to intervention shifts from being child-focused towards a more family orientated approach that acknowledges the important role of parents in the development of their children.

Family-centred service is described as a philosophy, attitude, and approach (National Center for Family-Centered Care, 1990 in Sontag & Schacht, 1994) that requires a fundamental reconceptualization of the way that professionals have traditionally served young children with disabilities (Bailey, Buysse, Edmondson, & Smith, 1992 in Sontag & Schacht, 1994). Family-centred early intervention programmes have become the 'best practice' model for service delivery to young children with special needs and their families (Bailey, 1987 and Bailey et al, 1992 and Shelton, Jeppson, & Johnson, 1992 in Sontag & Schacht, 1994). Research that has examined the communication patterns of hearing parents with their deaf children has in fact reinforced the importance of the family (Ritter-Brinton & Stewart, 1992).

Up until three decades ago, parents of hearing-impaired and deaf children were often the forgotten 'team member' (Maxon & Brackett, 1992). The focus of professionals has been devoted to the child, with little attention being given to the parents and families of these children (Northern & Downs, 1991). The clinician has traditionally been seen as the 'instructor' rather than the 'enabler', in the intervention process. Consequently, parents may respond with feelings of inadequacy when relating to their child (Moeller, Coufal & Hixson, 1990). Parents were traditionally guided to 'bombard' the child with language input, instead of being assisted in using conversational strategies such as turn-taking, recasting and story-telling, to develop nurturing interactions with the child (Moeller & Carney, 1993).

The shift towards family-centred intervention has been based on numerous concepts. Two of these concepts are as follows. First, the effectiveness of intervention depends on parents playing a more active part in intervention because they are the primary influences on their children's development. Second, families of children with disabilities are faced with numerous challenges that create difficulties for them in participating in intervention and/or carrying out routine childcare responsibilities. Consequently, professionals need to examine their attitudes towards parents, and shift from focusing on the child to collaborating with families and enhancing support networks (Mahoney et al, 1998).

The extended family network and extra-familial caregivers are now often included as

direct targets of intervention. This expanded scope reflects societal pressures and demographic changes in family patterns, including single-parent households (Fitzgerald & Fischer, 1987). Moreover, inclusion of specific training for parents and/or significant others, has been based on the premise that families can and should function as behavioural change agents for their children (Fitzgerald & Karnes, 1987).

Consequently, the question is no longer "Should parents become involved in the intervention process?" but rather "How should parents become involved in the intervention process?" The importance of training caregivers will now be discussed to further support the proposed need for caregiver involvement in intervention and for responsive caregiver-child interactions. As noted by Mahoney et al (1998), the critical determinant of programme effectiveness identified in numerous parent-directed studies was that parents are encouraged and supported to engage in highly responsive interactions with their deaf children. Advantages of caregiver-child communicative interactions are presented. Some ways to engage parents in the intervention process are proposed in the remainder of this chapter.

2.1.2 Caregiver Involvement and Training

Of relevance in intervention, three basic concepts relating to the promotion of development in young hearing-impaired children have been highlighted in the literature. First, parents have been pinpointed as the prime facilitators of language development; second, early intervention programmes result in accelerated language growth; and third, early use of sign language by hearing parents has been shown to promote the young hearing-impaired child's language development (Watkins & Clark, 1988). Each of these concepts will now be discussed.

The primary context for a child's language learning is the **caregiver-child dyad**. Routine interactions between mother and child may be a prerequisite for child language development and for motivating the child to learn (Connard & Kantor, 1988).

It is through interaction with significant others and in different situations that young children learn to develop their communication systems in order to achieve further success in interaction. Facilitative exchanges between children and responsive, familiar adults provide the rich environmental database in terms of content, forms, and functions (Fitzgerald & Karnes, 1987; Conti-Ramsden, 1993). Children's structural linguistic skills thus only make functional sense in the context of their pragmatic and conversational skills. The principles behind these pragmatic considerations have increasingly led professionals to consider parental involvement as an important aspect in language remediation with communicatively impaired children (Conti-Ramsden, 1993).

As the prime facilitators of language development in young hearing-impaired children, the caregiver is to establish an effective way of communicating with the newborn who has no experience in ways of communicating with others. The parent-infant dyad may then be viewed as a prototype of the teacher-learner partnership (Koester, 1992). This notion is very important, particularly in light of the occurrence of communication breakdown between hearing caregivers and their deaf children (see Chapter Three). It is believed that the needs for caregiver support and for the enhancement of effective and responsive communicative interactions are evident.

Gulker (1992) notes that despite single parent status or dual careers which are common in families today, a parent is seldom prevented from engaging in daily, potentially-rich language-learning rituals such as dressing, feeding, bathing, transporting, housekeeping and bedtime. Moreover, the characteristics of the contexts of reciprocal transactions in natural environments can be systematically arranged to enhance the learning of functional linguistic skills. For example, the contingency of natural consequences can be modified; opportunities to exhibit language behaviours can be increased; and expectations within the communicative interchange can be varied (Fitzgerald & Karnes, 1987).

Spencer and Gutfreund (1990) summarise positive effects on infants' development that result from mothers responding to their infants' actions as if they were meant to be communicative. Some of these effects are as follows. Children's rate of pre-linguistic and further linguistic communication development is positively associated with the extent to

which mothers base their own communicative behaviours on signals that are of interest from the child. That is, the infant acquires behaviours that are specialised for communication, and may learn words more efficiently when the adult labels objects upon which the child's interest is already focused. Finally, the child's social-emotional development may be positively affected where the mother has accepted and responded to those behaviours of the child, which could initiate new topics. Similarly, MacTurk, Meadow-Orlans, Koester and Spencer (1993) review a number of investigations on mother-infant interactions. They highlight findings of positive correlation between early maternal responsiveness and later infant competence and intelligence.

In agreement with the foregoing findings, yet in relation to hearing-impaired children, White & White (1984 in Spencer & Gutfreund, 1990) found that young hearing-impaired children whose mothers were least responsive tended to have more social-emotional and behavioural difficulties in later childhood. Furthermore, the social and emotional behaviour of deaf children, as with all children, is greatly influenced by their ability to communicate with significant others (Greenberg, 1980a).

Parents are in a position to control a critical teaching element, which is often unavailable to the professional. Such moments can be created by a Speech-Language Pathologist & Audiologist in a therapy situation, yet cannot compare with the frequent, spontaneous moments that arise in family activities (Gulker, 1992). Moreover, parents provide continuity to their children's education that cannot be achieved by the professional (Maxon & Brackett, 1992).

Dunst (1985) has stated that one of the most important roles that a professional can play in **early intervention** is in fostering supportive and reciprocal relationships between caregivers and their children. Nind and Hewett (1994) list several interventions that recognise that the influences in the parent-child dyad are two-way and that child development is enhanced through involvement in progressively more complex patterns of reciprocal, contingent interaction with someone close such as the caregiver. Training parents to adopt responsive interaction styles was shown experimentally to be associated with general sensorimotor and language development. Consequently, an increasing

number of relationship-focused or social reciprocity interventions have emerged, including the intervention programme of this study.

Additional advantages have been proposed for parental involvement in early intervention programmes as well as for specifically teaching parents (or significant others) to implement their children's language intervention. Kaiser (1993 in Iacono, Chan & Waring, 1998) suggested that parent-implemented interventions are likely to facilitate children's social communication skills because the specific techniques are often based on the characteristics of normal parent-child interactions. They too are likely to enhance generalization of newly learned skills through the continuation of intervention into a child's daily activities. Furthermore, Kaiser (1993 in Iacono, Chan & Waring, 1998:281) argued that parental involvement has lasting effects beyond the goal of improving the child's communication skills because "different and more positive social communication interaction patterns may be established".

Parent-professional collaboration, and addressing family needs and concerns may be critical ways of engaging parents in the intervention process yet these elements may be ineffective at enhancing children's development unless parents are encouraged to engage in more responsive interactions with their children (Mahoney et al, 1998). In view of evidence of the importance of parent-child interaction in encouraging optimal child development, parent-child interaction is increasingly recognised as an important aspect of early intervention programmes (Barnard & Kelly, 1990). Moreover, an acknowledgement of parent training has increased over the years, yet relatively few clinicians have engaged in such training in spite of an increased awareness.

An apparent reluctance of intervention professionals to include relationship-focused concepts into intervention practice may be related in part to limited training of professionals in this area (Mahoney et al, 1998; Wyngaarden Krauss & Jacobs, 1990). Mahoney et al (1998) put forward three assumptions regarding possible concerns of professionals that present as barriers to relationship-focused intervention.

First, there has been debate about the generalisability of findings from studies of typically developing children to populations of children with disabilities. This concern relates to proposals regarding the need for qualitatively different parenting styles. Second, there is a fundamental incompatibility of findings between parent-child interaction literature and the cornerstone of traditional approaches. While parent-child interaction approaches suggest that high responsiveness and moderate to low directiveness bring about effective interactions, traditional approaches emphasize directive, child-focused instruction. Accepting parent-child interaction concepts then requires professionals to retract from the traditional, directive teaching model. Third, the parent-child literature may well pose an ethical dilemma to professionals committed to respecting diversity and supporting family choice, in terms of the impact of relationship-focused procedures on cultural, religious, and individual values and beliefs about parenting or child-rearing (Mahoney et al, 1998). Issues relating to culture and other contextual factors are presented in section **3.2** as they pertain to this study.

The paucity of parent training could not be attributed to accountability or the lack of a scientific database. The literature is compelling in this regard. Simply put, programmes that involve parents produce greater gains than those programmes that do not (McDade & Varnedoe, 1987). In programmes that include hearing caregivers of deaf children from a social interaction perspective, support and training in communication skills to caregivers of children who use sign language as a primary mode of communication, needs to be specific for use with deaf signing children. Moreover, support and training in **sign language** for these caregivers is necessary.

Meadow, Greenberg, Erting & Carmichael (1981 in Connard & Kantor, 1988) assert that a hearing loss does not by itself preclude the development of positive parent-child interactions. Wood (1991) asserts that communication problems and the influence of communication styles of hearing adults on deaf learners are not inevitable or unavoidable. Evidence suggests that intervention can affect caregiver-child interaction (MacTurk et al, 1993).

Severe to profound hearing loss, in most cases, presents fundamental communication difficulties between hearing and deaf people, that may only be overcome if both groups make a concerted effort to understand the culture and language of the other. If access to deaf children's own language and culture is restricted, language difficulties and problems of social identity and self-esteem will probably be impossible to avoid (Woodward, Allen & Schildroth, 1988).

Even though hearing parents are a major linguistic influence to their deaf children, their native speech is inaccessible to the child and until they participate in intervention and the child is enrolled in an educational programme, tremendous communication problems will arise. Where the mode of sign is chosen by hearing parents of deaf children, either as a positive first choice or as a last resort, parents are likely to be under pressure to learn a new language in order to communicate with their child (Rudser, 1988).

Early sign use by parents has been shown to promote young hearing-impaired children's language development (Watkins & Clark, 1988). Moeller and Luetke-Luetke-Stahlman (1990) argue that since parents provide the majority of input in their child's early years, intervention programmes must often focus on teaching parents a sign system. In agreement with Swisher and Thompson (1985), rather than mothers taking more sign classes, intensive programmes that are geared specifically towards helping mothers use sign language with young deaf children, should be devised.

However, hearing parents of deaf children have traditionally had little or no instruction in the special needs of deaf children (Gaines, 1980 in Gaines & Halpern-Felsher, 1995). As noted by Swisher and Thompson (1985) signing training in the past has often been ill-adapted to parents' needs and insufficient in quantity. Sign language classes typically emphasize the teaching of vocabulary, with minimal practice in encoding or decoding real communication. Moreover, in community sign classes, the vocabulary offered is usually inappropriate in terms of the language needed daily by mothers, and communication practice is unlikely to be related to children because of the diverse nature of those attending the classes. Similarly, Watkins and Clark (1988) criticize sign

language classes for being typical for adult use rather than for home/infant use. These authors stress the need to improve training in sign language for hearing parents.

It may be argued that this nature of sign language training for parents contributes towards parents being generally unable to communicate on a comparable level with their child through sign language, if sign language is the primary medium of communication for the child. Conversely, Joseph and Alant (2000) present their findings on communication between South African, hearing mothers and their deaf children who sign, which support the impression in the literature that signing children are generally unable to communicate within the family. Deaf children often exceed their hearing parents in sign language competence (see Takala, Kuusela & Takala, 2000).

Parents are faced with learning a new language that is in a new linguistic modality, in order to communicate with their child. If parents choose sign language as the young child's first language, these parents are still learning this language at a period when the child is in the most crucial stages of acquisition. Bornstein, Saulnier and Hamilton (1980 in Newton, 1985) reported that parents do not advance significantly in their sign language skills much beyond a beginner's level of proficiency, even after three years of exposure and use. Similarly, Spencer (1996) states that the parents will not be fluent signers during the child's early years. Hence, the parents' ability to provide their child with a complete, fluently expressed language model tends to be limited.

Improvements in parents' ability to sign have been documented (see Meyers & Bartee, 1992) but their learning rate often parallels that of the child, and as poor models for language development they may well lower the child's potential vocabulary level (e.g. Meyers & Bartee, 1992; Marschark, 1993 cited by Gaines & Halpern-Felsher, 1995). Moreover, Van der Lem (1987) highlights the considerable amount of time taken for hearing parents to become fluent in signing, if they ever do. As noted by Swisher and Thompson (1985), parents' skills are unlikely to improve without a major commitment of time and effort.

In sum, a large body of evidence highlights the need for hearing parents of young deaf children to foster language and communication behaviours that are appropriate for the child who has limited access to oral language by virtue of the severity of hearing impairment. In view of parents' critical role in child development, it has been proposed here that hearing parents require training in sign language that is suitable for use with young deaf children, as well as support and the enhancement of effective and responsive communicative interactions. In agreement with Swisher and Christie (1989), difficulty in communication between hearing parents and deaf children is not simply a matter of skill in manual communication. These authors urge that parents be made aware of their children's visual requirements and of ways in which their own behaviour may be hampering communication.

2.2 Rehabilitation Services in a Developing Context

In addition to addressing language and communication in intervention, one cannot disregard the context in which the caregiver-child dyad live. The South African government is undergoing reforms in health, education, welfare and other sectors so as to achieve better quality of the life of its citizens (Guthrie, 2000). A major challenge faced in intervention relates to the families of many deaf children experiencing socio-economic deprivation and having experienced educational discriminatory practices. The apartheid education system is largely accountable for the high degree of unemployment and poverty within non-White cultures (Graham-Brown, 1991). Furthermore, historical discriminatory practices in the educational system did little to develop the advanced linguistic and cognitive skills in the caregivers of disadvantaged communities (Ogilvy et al, 2001). This history implies the disempowerment of those individuals adversely affected by the Apartheid regime.

In communicative intervention with deaf children who have limited access to spoken language, the importance regarding language and communication development within a context of poverty needs to be addressed. The priority is more likely to be meeting basic needs rather than that of ensuring effective communication for the deaf child in his/her

family and community. Consequently, the influence of the broader context on child development cannot be disregarded in intervention.

The present study was carried out within a broader framework in which the involvement of the primary caregiver of the young Deaf child in his/her development was deemed to be essential. A novelty of this study is the consideration of factors not only relating to the child's deafness, but also to culture and the socio-economic context within an ecological perspective. Cultural factors relate to among others, the family, family structure, language, and interpretation of disability (see Crnic & Stormshak, 1997; Louw & Avenant, 2002; Loest, Britz & Pauw, 1997; Groce, 1999) while socio-economic factors relate to among others, poverty, accessibility to services, and social support (see Guthrie & Sait, 2001; Zinkin & McConachie, 1995). An ecological framework in intervention is further discussed in Chapter Four in terms of the development, aims, nature and components of the programme presented in this study.

2.2.1 Current Rehabilitation Services in South Africa

Currently in South Africa, both government and non-government sectors are implementing new strategies and programmes congruent with **the transformation process** in health and education and in the drive to address past inequalities in the availability of rehabilitation services for the majority of disabled people. However, few of these new initiatives and programmes are being evaluated formally (Department of Health, 2002). Much **evaluation and monitoring** of newly implemented programmes has been based on subjective procedures aimed at improving, planning, organizing and implementing programmes (Mbengashe, 2002). The goal of monitoring and evaluation according to the Department of Health (2002) is twofold. Firstly, to establish appropriate monitoring and evaluation procedures for all rehabilitation projects in all settings at all levels of healthcare, and secondly to ensure that the information obtained from such procedures is used to develop appropriate, effective, sustainable, cost-effective rehabilitation services for all South Africans in need of such services.

Once a relatively rare event in human services, programme evaluation is now common (Jacobs, Kapuscik, Williams & Kates, 2000). There is considerable discussion in the literature and among professionals regarding the potential impact on parents and families, as a result of participation in early intervention programmes. The high visibility and popularity of these services has increased the demands for evaluations to determine programme effectiveness (Jacobs et al, 2000). Jacobs et al (2000:3) define evaluation as "a set of systematically planned and executed activities designed to determine the merit of a program, intervention or policy, or to describe aspects of its operation." This broad definition includes those activities usually considered outcome or impact evaluation, as well as those generally viewed as process or implementation evaluation (Jacobs et al, 2000).

In spite of government initiatives to date, no **comprehensive intervention programmes** exist for hearing caregivers and deaf signing children from traditionally disadvantaged communities in the Western Cape (Ogilvy, D., personal communication, December 2003). Programmes are however provided for oral deaf children, but many severe-profoundly deaf children from disadvantaged backgrounds are unlikely to succeed in oral programmes as a result of a lack of financial, educational and social support. Furthermore, there continues to be inadequate resources available for deaf children requiring **education through sign language**, and few opportunities for profoundly deaf children who display adequate cognitive ability to follow an academic stream of education.

For socio-political reasons, it is questionable as to whether deaf children and their parents from disadvantaged communities have a real choice in terms of communication mode in view of poverty and economic constraints. These children **need to use sign language** as a primary mode of communication. However, just as hearing parents of deaf children who do not have a history of disadvantage face **barriers in learning sign language**, traditionally disadvantaged parents also face barriers. These barriers may however differ slightly. A history of disadvantage in a multilingual and multicultural South Africa implies that the inadequate signing proficiency of hearing parents may be attributed to socio-economic and geo-political factors. These barriers may include inaccessibility to

the educational centre, transport difficulties, time constraints due to employment and family constraints, language barriers, lack of contact with a signing environment or with deaf adults, and lack of resources (Ogilvy et al, 2001).

In addition to socio-economic disadvantage of families of deaf children, a barrier for **rehabilitation professionals** in following a relationship-focused approach to intervention in the context of a developing country relates to inequalities in educational experiences. Studies have shown that the academic success of hearing and hearing-impaired children correlates with the level of parental involvement in their child's education (Calderon et al, 1998). In South Africa, inequalities in past educational experiences have been identified as a barrier to effective collaboration and involvement of parents (Brown, 2000). For those who experienced discrimination, like the caregivers involved in this study, low levels of education were attained and uncertainties regarding current educational practices exist (Brown, 2000).

This history of Apartheid has resulted in these **caregivers** in general playing a minimal role in their children's educational lives. Because of the mother's educational history, she rejects herself as a worthy person and this affects the relationship with her child (Mehl, 1991). Many of these parents are wary of getting involved in their children's education as they were disempowered and discouraged from being involved in or actually taking part in the management of their child. Moreover, many parents are further alienated in that they feel that their traditional culture is no longer of value to their children (Machet, 2000).

2.2.2 Some Suggestions for the Intervention Process in this Context

Fitzgerald and Fischer (1987) proposed four service delivery components in an ecological framework of a family involvement model for hearing-impaired infants. These components include supportive counselling, information exchange, educational advocacy and team decision making, and facilitation of child communicative competence, while focusing on parents and significant others in the infants' lives. Similarly, the researcher

acknowledges the need for an **ecological perspective in intervention** and to incorporate components of **support, information, educational advocacy, and language and communication** in programmes for hearing parents and their deaf children, as indicated in Figure 2.1. However, the various factors that influence the caregiver-child dyad need to be acknowledged. It is believed that factors extend beyond the child's deafness, as indicated in Figure 2.1. The current desperate situation in terms of **the context** of rehabilitation services in post-apartheid South Africa and the cultural and socio-economic climate – as described in Chapters One and in this chapter – cannot be disregarded in the development, implementation and evaluation of rehabilitation services for traditionally disadvantaged people. In this context, the intervention programme needs to provide among others, forms of social support (e.g. through group intervention) and financial support (e.g. transport costs to access the service).

Figure 2.1 on the following page illustrates the main issues involved in conceptualising, implementing and evaluating the programme of this study.

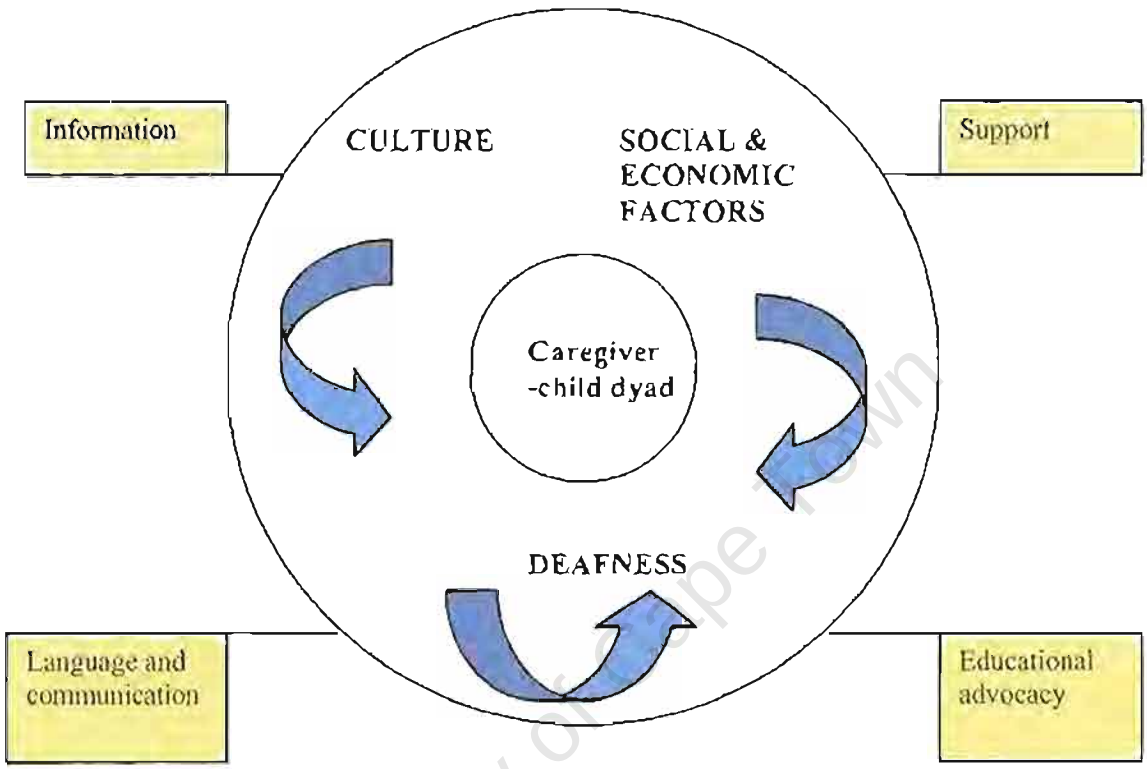

Figure 2.1: Schematic Representation of the Ecological Perspective to Conceptualizing, Developing, Implementing and Evaluating the Communicative Intervention Programme

A holistic approach to intervention by means of an emphasis on the caregiver-child dyad within an ecological perspective is proposed. Unlike traditional approaches to intervention, this approach implicates a social model, as opposed to a medical model, of disability and a socio-cultural perspective on deafness in intervention. The critical importance of primary caregivers in early habilitation of their deaf children needs to be recognised in rehabilitation programmes. This may be achieved by adopting a parent-child interaction approach to intervention. Moreover, a conversational model of language intervention that is oriented towards the child who is deaf and whose primary

means of communication is South African Sign Language is proposed. This approach involves the **training of hearing caregivers** to facilitate language acquisition and enhanced caregiver-child communicative interactions. This training incorporates the teaching of sign language, support in the use of intuitive communicative behaviours and training in less intuitive behaviours for use with the deaf child through the use of adult-child interaction strategies required for use in functional exchanges in daily teaching and care giving environments. The caregiver-child dyad at the centre of the approach is believed to necessitate consideration of the broad context of factors that influence language and communication development. In addition, it is believed that fundamental to the success of the intervention is that deaf signing adults are critical in all stages.

The approach to intervention in a developing context such as that of South Africa needs to emphasize **empowerment of the caregivers**. This may be encouraged through programme components of support (e.g. counselling, financial), information exchange, educational advocacy, and facilitation of effective caregiver-child communicative interactions using sign language, within group intervention.

Of great importance in this empowerment perspective is **collaboration** between the caregivers, their deaf children and the comprehensive team involved in the provision of the programme, as well as the relationship of caregiver-child interaction to the effectiveness of the programme. In this regard, the context of collaboration is within a multilingual, multicultural society in which approaches to intervention need to be culturally and linguistically responsive to the recipients thereof.

Cultural responsiveness refers to the extent to which an intervention programme is aware of and adapts to cultural differences among participants. The notion of cultural competence suggests that programmes develop their capacity to work effectively with participants of various cultural groups over time and that this should be an important programme goal. In general, culturally competent programmes are able to offer services in the native languages of participants (Jacobs et al, 2000). In the conceptualization of this programme, the aim was to develop a culturally responsive programme. By means of acknowledging the multicultural nature of the South African society and hence that

different cultural practices exist, the need for **cultural competence** became clear and is in fact one of the principles of the programme.

The researcher proposes the critical importance of providing programmes such as the one outlined above in order to embrace an ecological perspective in a developing context and address socio-economic and cultural issues.

Furthermore, the researcher agrees with Fitzgerald and Fischer (1987) that a future challenge is to provide **intervention specialists** who have the perspectives, knowledge and skills that are necessary to establish ecologically based family intervention models. In this regard within the South African context, Speech-language Therapists and Audiologists are likely to benefit from training, pre-service and even in-service experience in working effectively with family-related problems, in integrating language and communication objectives, and in developing a culturally appropriate perspective in service delivery. If rehabilitation services are to be comprehensive in nature, training implications need to include multidisciplinary collaboration. In agreement with Penn et al (in process), specialized educationalists and other professionals in contact with the deaf child and his/her parents need to be aware of the constitutional and educational rights of the deaf, and of the different language options and implications thereof for the deaf child.

In sum, this chapter has highlighted the need for a shift in approaches to intervention towards a social interaction perspective that incorporates caregiver-child interaction and caregiver training. The context of rehabilitation in South Africa was outlined. It was highlighted that the child's language and communication development takes place in a context of among others, transformation in health and education, limited services and resources, poverty, and a history of disadvantage for those adversely affected by apartheid. An approach to intervention in this context was then proposed so as to indicate important issues that need to be considered in rehabilitation services for socio-economically disadvantaged families. The following chapter focuses specifically on communicative interaction with deaf children.

CHAPTER THREE:
COMMUNICATIVE INTERACTION OF HEARING CAREGIVER – DEAF CHILD DYADS, AND DEAF CAREGIVER – DEAF CHILD DYADS: THE NEED FOR INTERVENTION FOR HEARING – DEAF DYADS

"It seems entirely possible that deaf children experience developmental and educational delays not because they lack a language of thought but because hearing people find it more difficult to pass on their knowledge, skill, and understanding to them because of problems of communication" (Wood, 1991 in Koester, 1992:366).

A large body of research has focused on the nature of linguistic input to and interaction with children, particularly parent-child communicative interactions in normal and atypical/impaired language-learners (Snow, 1994). The focus in such research studies, where the child is either hearing or deaf, has underlined both the importance and the reciprocal nature of early parent-child interaction. According to Cross (1984) early parent-child interactions form a primal bond that is the foundation for relating to and communicating with others. Parents continue to play a primary role in the development of communicative ability throughout the pre-school and early elementary years. It is largely through interactive experiences in the home that children come to understand their world and have the language for mapping onto and extending concepts. Parents are thus viewed as successful language facilitators (Wolf Nelson, 1998). Hence, for speech-language pathologists interested in the use of language, the unit of analysis has been the conversational dyad, usually of the parent and child and their interactive behaviours in a given context (Prutting & Kirchner, 1983 in Owens, 1999).

This chapter serves to highlight the importance of interaction between hearing caregivers and their young deaf children, from the perspective of analysis and to a lesser extent intervention as a means of highlighting the need for communicative intervention. Rather than focusing solely upon negative aspects that generally result in communication breakdown, positive aspects and advantages of caregiver-child interactions are presented with a view to highlighting the importance of support in intuitive behaviours and training

in less intuitive behaviours. Hence, caregiver involvement in terms of communicative transaction and interaction with the child is advocated in this chapter.

Lederberg and Prezbindowski (2000) point out three methods that have been used to examine linguistic input and parent-child interaction where the child is deaf. First, the majority of research compares hearing mother-deaf child (Hd) dyads[7] with hearing mother-hearing child (Hh) dyads. In this way, the impact of the child's deafness on the parent-child interaction can be determined. Differences in dyadic functioning are seen as strengths or weaknesses, depending on whether or not they facilitate child development. As will be discussed in this chapter, some of the differences identified may be viewed as positive adaptations to the child's needs (e.g. increased visual communication), while others may be seen as areas of concern (e.g. increase in control).

Second, deaf mother-deaf child (Dd) dyads are included in some studies as a comparison group in order to identify the impact of deafness and of the lack of a common communication system between parent and child on their interaction (Lederberg & Prezbindowski, 2000). From an intervention perspective, and of importance in this study, the observation of interaction patterns in Dd dyads provides a model of the positive adaptations possible when parents interact with their deaf children. In agreement with Lederberg and Prezbindowski (2000) these studies may be useful in interpreting the strengths and weaknesses in Hd dyadic interaction.

Third, characteristics of Hd dyadic interaction have been related to outcome measures, such as language level, in order to determine those aspects relating to a positive developmental outcome (Lederberg & Prezbindowski, 2000).

In agreement with Lederberg and Prezbindowski (2000), it is important to consider positive aspects of interactions between hearing parents and their deaf children rather than simply identifying those areas in which these dyads experience problems. Indeed,

[7] The abbreviations used in this chapter that refer to particular dyads apply to the primary caregiver, to the mother or to either parent of the deaf child. The children referred to in this study are those who have not yet reached primary school level.

communication breakdown is commonly reported in these dyadic interactions (see Koester, 1992; Wood, 1991; Spencer & Gutfreund, 1990). However, by focusing solely on problems that contribute towards breakdown, professionals working with these parents may become biased to focus on negative aspects of Hd interaction. The approach to investigating Hd interaction and to intervention in this study was to support the natural or intuitive competencies of hearing primary caregivers that may have been influenced by the child's deafness and resultant caregiver-child mismatch in their communication system. Furthermore, aspects of interaction that may need to be modified were to be identified, and the less intuitive communication behaviours that are effective in Dd dyadic interaction were to be identified and highlighted in intervention.

Deaf mothers have the cultural knowledge regarding interaction with their deaf children. However, the majority of deaf children are born to hearing parents for whom the necessary adaptations in communicative settings may be just as foreign as a visual-gestural form of communication. For these parents, especially those who decide to employ a visual-gestural system of communication with their child, many of the intuitive behaviours that relate to the use of spoken communication may have to be modified in order to shift to another modality. Similarly, these parents would need to learn less intuitive behaviours on a conscious level so that these can become automatic and natural components of the parents' interactive repertoire with their deaf child. These behaviours include for example, methods of gaining and maintaining attention primarily through the visual and tactile channels, and incorporating grammatical features into facial expressions (Wood, 1991).

Koester, Papousek and Smith-Gray (2000 in Lederberg & Prezbindowski, 2000) suggest that much of *early* interaction between hearing parents and their deaf children is based on intuitive parenting which is a system that is mutually regulated by infant and parent. The parents attend to cues indicating that the infant is alert and ready to interact as well as parents using appropriate visual and vocal strategies to gain and maintain their infant's attention. However, the natural tendency of hearing parents to communicate effectively with their deaf children appears to become less effective as the child's communicative needs increase, and so the need for intervention arises.

In particular, habitual communication of hearing mothers is through a simultaneous visual-auditory approach. According to Spencer and Gutfreund (1990 in Jamieson, 1994) hearing mothers have been observed to continue using this approach with their deaf children in spite of the child's hearing loss. The need for intervention is hardly surprising in view of for example, the difficulty of hearing parents to shift from an auditory to a visual orientation (Erting, 1987, 1988 in Jamieson, 1994). In this regard, traditional approaches to intervention have emphasized methods (what) rather than processes (how) of communication (Jamieson, 1994).

Since children are not born knowing the conventions of conversation, but learn them through interactions with their primary caregiver/s, it is very necessary that caregivers encourage this development in their children (Swisher & Christie, 1989). Section **3.1** below addresses aspects of interacting with a deaf child that require hearing caregivers to shift their orientation in communication from that which they are accustomed. Comparisons are therefore made between Hd and Dd dyadic interaction. A review of research studies that examined input of hearing parents to deaf children and Hd interaction is also presented in order to highlight some critical areas that need to be addressed in intervention while simultaneously looking at the possible factors contributing to differences between Hd and Hh dyads.

3.1 NATURE AND QUALITY OF INPUT TO AND INTERACTION WITH DEAF CHILDREN

3.1.1 Input and Interaction in Hearing-Deaf Dyads

Meyers and Bartee (1992) point out that deaf children are often unable to participate in the institution that has the responsibility for teaching the skills for living in society - the family. According to Joseph and Alant (2000:16) impoverished communication between signing children and their hearing parents is highlighted in "the difficulties, isolation and bewilderment that deaf children experience in situations that are considered normal in everyday life". Such reports provide evidence that these children are unable to access

information that encourages their understanding of events around them, and share their feelings and thoughts with those closest to them, invariably being parents and siblings (Lane, Hoffmeister & Bahan, 1996 in Joseph & Alant, 2000). Emotional frustrations of deaf children and their parents that relate to the impoverished communication interaction are commonly reported (see Joseph & Alant, 2000).

Probably the most difficult problems that deaf children of hearing parents must face are the acquisition of language (Strong, 1988) and a lack of functional communication (Fitzgerald & Karnes, 1987). Language development is influenced by several factors, including the quality of the **language input** the child receives from his/her parents and significant others in the first few years of life. A great deal of impedance in language development is present in the Hd dyad, which may be attributed to implications of profound deafness.

Language delays and deficiencies continue to be reported for children with hearing loss who have hearing parents (e.g. Hadadian & Rose, 1991; Spencer, 1993). These children's difficulties are usually explained by reference to the impoverished language model received by these children compared to those who are hearing (Spencer, 1993). Language is learned by normally developing children as they interact communicatively with adult models who use that language. This model language must therefore include evidence of all aspects of the linguistic system. If not, it is difficult for the child to incorporate them in his/her own developing system (Newton, 1985). Deaf children born to hearing parents are not always given the linguistic opportunities given to deaf children of deaf parents, and are forced to learn to communicate via Oral English, pantomime or non-native signs (Power, Wood, Wood & MacDougall, 1990). Sign language instruction for the deaf child frequently only starts when the hearing impairment is detected or even later when the child enters formal education where signing is the primary medium of instruction (Magnuson, 2000).

In the absence of an appropriate language model, Calderon et al (1998) note that regardless of the educational approach taken, deaf children are often at risk for the delayed development of language, critical thinking and poor academic performance. In

contrast, deaf children of deaf parents develop language at the same rate as hearing children of hearing parents. Deaf parents participate as language facilitators and provide appropriate language models for their children to develop language. This indicates the fundamental role that caregivers play in the development of their child's language. Hence, it is essential that hearing caregivers of severe-profoundly deaf children who use sign language as a primary mode of communication, learn sign language so that the child experiences adult-child communication.

Reportedly, deaf children's reduced exposure to the linguistic model may occur for two reasons. Firstly, access to oral language is limited by the severity of hearing impairment. Secondly, hearing adults may modify and/or reduce the nature of their language when communicating with deaf children (Newton, 1985).

Hearing parents of deaf children naturally have strong desires for the child to speak and understand spoken language (Syder, 1992). The observed substantial reductions in speech complexity by mothers of deaf children may inhibit the child's language and communicative development. That is, the maternal speech adjustments are so extreme that they no longer provide a language environment conducive to the deaf child's linguistic development (Power et al, 1990). Furthermore, there is some evidence that hearing mothers produce less language, regardless of the mode of communication, with children with hearing loss, compared to those with normal hearing (Spencer, 1993).

With regard to the reason for adults altering the nature of their language, Newton (1985) proposed that adults may wish to accommodate to their perception of the child's communication needs. Unique accommodations may be explained as adaptive responses to a deviant rather than immature language user. Moreover, adults may view themselves as teachers of language form rather than as sharers of information. An additional factor that often leads adults to modify their language may be attributed to efforts to incorporate sign language. Parents have been found to simplify their language input, consistent with their level of signing skill. However, when parents consistently reduce the complexity of their input, the child is exposed to a language model that lacks richness (Newton, 1985).

This evidence suggests that deaf children of hearing parents suffer greatly from a lack of language input that is of a good enough quality to facilitate cognitive or academic proficiency in language (Strong, 1988). The following aspects relating to input and interaction highlight the importance of considering a **channel of communication**, other than the auditory channel, that is appropriate for the deaf child who has limited access to oral language. In this way, some differences are highlighted in Hd and Dd communication.

A great deal of impedance is present in the Hd dyad in that the caregiver is likely to employ an auditory rather than a visual orientation in communication. These caregivers are typically not accustomed to communicating via the **visual channel** that has remained intact for the deaf child (Swisher & Christie, 1989). In comparison to hearing, vision is directional in that visual reception typically requires the individual to focus directly on the communication partner delivering the message and/or on the referent. This visual orientation implies that the caregiver is to become aware of the child's visual attention, to regularly monitor what is being taken in, and to adjust his/her communication accordingly (Swisher & Christie, 1989).

A further issue that is common in the literature on Hd interaction that relates to the channel of communication used, is the phenomenon of **'divided attention'** (Lederberg, 1993; Rushmer, 1994; Wood, 1991). Hearing parents are accustomed to being able to make use of two channels of communication (Swisher & Christie, 1989).

Since auditory information for many hearing-impaired children is insufficient or absent, their hearing parents cannot depend upon sound to establish joint attention and reciprocity (Rushmer, 1994). Difficulties arise in situations in which the conversation concerns something in the environment (Swisher & Christie, 1989). 'Divided attention' refers to the fact that deaf people have to shift their visual attention from the environment to the communicator in order to receive the communication message (Lederberg, 1993). Consequently, when playing with toys and interacting with others, deaf children need to divide their attention in a sequential manner between the toys and their partners' communication. If something is said or signed to the child, s/he must look away from the

object to what is being communicated. Wood (1989 in Spencer, 1996) asserts therefore that deaf children process linguistic and non-linguistic information sequentially. This situation contrasts that for hearing children who can visually attend to the environment while simultaneously hearing speech and thereby process information simultaneously.

It follows then, that allocation of attention to the verbal message and the referent, which is habitually simultaneous for the hearing parent, needs to be made more sequential for the child. In this way, both environmental and linguistic information is received. This however, is likely to influence the timing and rhythm of discourse to which the parent is accustomed (Swisher & Christie, 1989).

Observation of such situations reveals frequent dislocations of mutual understanding (Wood, 1991). For example, the hearing adult may start to communicate before s/he has secured the attention of the child. Some adults, in trying to minimize such problems, may try to force or direct the child's attention. Yet, this leaves the child with the problem of solving the intentional meaning of what the adult is doing (Wood, 1991). Lederberg (1993) asserts that unless deaf children coordinate their attention with their partners' communication, they will communicate and interact less than hearing children.

The second effect of the problem of divided attention is that it causes adults to be less responsive to deaf children's focus of attention. Adults may support the development of divided attention by attracting attention to themselves at appropriate times during the child's play, and communicating only when the child's attention has shifted to the adult. Wood (1989 in Lederberg, 1993) proposed that hearing adults try to shift deaf children's attention to themselves at inappropriate times, rather than following the flow of the children's attention. The consequence is a reversal of contingency where the mother of the deaf child forces her child to follow her lead, as opposed to the mother following the lead of the child, as is usually the case with hearing children. Unlike for deaf parents, hearing parents would need to learn this skill since it is not a part of their normal communication system (Lederberg, 1993).

The foregoing issues that relate to communication channel differences indicate the possibility of communication breakdowns such as when the child fails to respond. Of great importance in terms of language input, the child may be missing parts of the caregiver's signed input on a frequent basis. As noted by Swisher and Christie (1989), mothers of young deaf children need to make some changes in their natural means of establishing joint attention in order to accommodate the child's visual-linguistic needs. The parent needs to "develop a new set of awareness and interactional sensitivities, changing communicative habits, which are long-standing and unconscious" in order to communicate visually (Swisher & Christie, 1989:37).

In addition to the different communication channels used by hearing and deaf individuals, gesture and language for hearing people are in different **modes** that can be produced simultaneously, whereas for the deaf they are in the same mode and must be produced sequentially (Swisher & Christie, 1989).

Signed languages of deaf communities are visual-gestural languages, where gesture is a generic term referring to body movement (Baker-Shenk, 1985). Like spoken languages, sign language is complex and infinitely creative. It has a formal structure, is systematic and rule-governed (Penn, 1993; Brennan, 1992). This system of communication can thus provide the deaf child with a ready means of communication that s/he can use to test his/her developing language ability with his/her parents and significant others. Moreover, the child can modify according to the feedback received. In contrast, in the case of oral input only, language input is limited to the words that the child is able to recognise on the lips, and output is restricted to the words that s/he has learned to pronounce intelligibly (Brasel & Quigley, 1977).

As already mentioned, deaf children's language delays, unlike those of most other groups of children with disabilities, usually occur because of a lack of access to a language model (Spencer, 1996). Most of the hearing parents of deaf children have little knowledge about deafness before their child's diagnosis and are unfamiliar with sign language in any form (Emmorey & Reilly, 1995). According to Meyers and Bartee (1992), these children and their parents usually have no system of communication in the

home other than primitive iconic signs, resulting in an environment almost devoid of meaningful communication. As presented in Chapter One however, one cannot dismiss the numerous difficulties experienced by hearing parents in learning a new language such as sign language, as well as the challenges faced within developing countries.

Prior to a discussion on interaction between deaf parents and their deaf children, some differences relating to the communication style of caregivers of deaf children that may give rise to overt communication breakdown, will be presented. These differences concern the frequently studied dimensions of maternal or parental behaviour, namely directiveness and contingency.

- **Control and Directiveness**

According to Wood (1991:249) one of the main problems hearing people face in communication with deaf children, regardless of communication mode, is **"too much control"**.

The overly-controlling, highly directive behaviours of hearing caregivers of hearing-impaired children in comparison to the behaviours of caregivers of hearing children, is a common topic in the literature. A highly directive caregiver tends to use language primarily to control the child's attention and behaviour, rather than using language as a reciprocal, communicative, and informational exchange (Conti-Ramsden, 1994). Meadow, Greenberg, Erting & Carmichael (1981 in Spencer & Gutfreund, 1990 and in Koester, 1992 and in Musselman & Churchill, 1991) found that hearing mothers of deaf children give more directive and controlling communications than is the case in either deaf mother-deaf child or hearing mother-hearing child dyads. Lederberg and Prezbindowski (2000) point out however, that directiveness has traditionally been studied by examining the characteristics of maternal communication/language rather than overall interaction style. The last decade has brought with it a realization among researchers that maternal directiveness or control is not a unitary dimension.

According to Guralnick and Neville (1997 in Weitzman, 1997), the issues of parental control and warmth are consistently reported in the links made between positive versus

negative child outcomes in various areas of development. Higher levels of social competence have been linked to positive displays of parental affect and reciprocally, lower levels of competence have been linked to negative parental affect as well as to overly controlling parental style.

Similarly, parental attunement or mis-attunement appears to be the process that shapes the child's feelings of emotional connectedness and which influences the child's ability to establish positive relationships (Goleman, 1995 in Weitzman, 1997). An attuned parent communicates to his/her child the sense that the child's emotions are understood and are met with empathy, acceptance, and are reciprocated. With regard to both typically developing and at-risk children, positive interaction during the first few years of life tend to be linked with better subsequent intellectual and language abilities (Barnard, 1997 in Weitzman, 1997).

Yet, hearing mothers of deaf children have been described as more didactic, dominant, intrusive, and less flexible, permissive and approving, than mothers of hearing children (Newton, 1985; Greenberg, 1980a). These hearing parents use more frequent imperatives and directives, fewer questions (particularly *Wh*-questions), ask for fewer suggestions, use less complex syntax and less language showing solidarity and agreement (Newton, 1985; Hyde, Elias & Power, 1981 in Power et al, 1990).

When people interact with someone whose responses appear limited (e.g. mentally handicapped children and the hearing-impaired) a common conversational strategy seems to be to use more directive language (White & White, 1984). It has been suggested for example by Anderson (1979 in White & White, 1984) and by Conti-Ramsden (1994) that the heightened use of imperatives and of certain question forms is aimed at eliciting turn taking to increase interaction levels. In fact, this explanation would account for the decrease in use of imperatives in the 'normal' developmental literature, in which imperatives are seen to decrease as the children show increasing language ability (e.g. Cross & Johnson-Morris, 1980 in White & White, 1984). This effect has also been found with mothers of hearing-impaired children with better communication skills (Wood, 1982 in White & White, 1984).

Koester (1992) agrees that the apparent dominance in hearing mother-deaf child pairs stems from the mothers' concerns about maintaining interaction. Furthermore, Koester (1992) asserts that the hearing parents feel the need to provide their deaf children with adequate stimulation. Duchan (1989) considers the child in relation to the adult's communication style and asserts that a caregivers' conversational versus directive style is related to the child's responsiveness. This indicates that adults may be directive in an effort to engage reticent children in interaction. Further support for this engagement goal as a reason to be directive comes from studies in both hearing and deaf literature of adult use of attention-getting devices (e.g. Ninio & Bruner, 1978 in Duchan, 1989; White & White, 1984).

A tendency toward directiveness may then be viewed as an adaptive response to a situation in which language and communication abilities are limited. It follows then that the possible reasons for the adult's use of directiveness need to be examined prior to a conclusion that directiveness is counterproductive to language learning and successful interaction (Duchan, 1989).

Even though some researchers have proposed that deafness causes an increase in control techniques, others suggest that the dimension of control needs to be examined in terms of types of control (Lederberg, 1993). Along with the realization among researchers that directiveness or control is not a unitary dimension, comes a realization that some types of control may have a positive impact on development while others may have a negative impact (Lederberg & Prezbindowski, 2000). Tannock (1988 in Lederberg, 1993) proposed three types of adult control, each with different causes and effects on children's development. These include topic, turn taking and response control types. Topic control refers to the adult's tendency to initiate and maintain their own topics rather than those based on the child's interest and ongoing activity. Turn taking control – also referred to as maternal dominance – occurs when the adult dominates the interaction by taking more frequent and lengthy turns than those of the child. Response control refers to the use of questions and commands to elicit responses from the child.

Of these three types of control, significant findings exist only for turn taking control. That is, deafness clearly increases maternal turn taking control. In particular, mothers of deaf children consistently have been shown to use more behavioural directives than do mothers of same-age hearing children (e.g. White & White, 1984; Power et al, 1990). This increase in the use of directives seems to result from deaf children's language delay (Lederberg, 1993).

Similarly, Conti-Ramsden (1994) strongly suggests the use of a functional definition of directives. According to this author, directiveness and control have been interpreted in a negative light in the literature. The way that the directiveness is defined is very important. It is proposed that it be defined in terms of the role that the directives play in discourse. For example, the question "Can you pass me the car?" can, in the context of a caregiver addressing his/her child and extending his/her hand, function as an indirect request rather than as a choice question. Such refinements in analysis allow for the identification of characteristics that may help versus hinder the child's communicative development (Conti-Ramsden, 1994).

Furthermore, one needs to appreciate the reciprocal nature of social communication and cannot dismiss the language proficiency of the child. That is, both caregiver and child have an influence on one another in their interactions - caregiver behaviours influence the child's language development and child behaviours influence caregiver's style (Moeller & Luetke-Stahlman, 1990). It should thus be the goal of interventionists to include both caregiver and child in the intervention process in order to promote rich and satisfying dyadic communicative interactions.

- **Contingency**

The reciprocity and consequences of parent-child interactions is an important subject of inquiry in child development research. Several researchers have reported that infants learn a number of communicative rules during the first year of life at which time there are some reciprocal effects between communication ability and infant obedience. The dynamics of this interactive behaviour are affected when the child is born with a severe auditory impairment (Hadadian & Rose, 1991).

In addition to a directive style adopted by hearing caregivers of deaf children, lessened contingency between behaviours of mothers and infants (e.g. Nienhuys & Pattison, 1986 in Spencer & Gutfreund, 1990) as well as decreased positive affect and social play (e.g. Nienhuys & Tikotin, 1983 in Koester, 1992) have been reported.

Caregiver sensitivity in the form of positive emotion, contingent responsiveness and stimulation has been found to correlate positively with indices of cognitive competence (Rea et al, 1988). The focus in research studies, on caregiver-child interactions, where the child is either hearing or deaf, has underlined both the importance and the reciprocal nature of early caregiver-child interaction.

Parent-child interaction literature suggests that effective interactions are characterized by high responsiveness, and moderate to low directiveness (Mahoney et al, 1998). A large body of research shows that there are **positive effects of semantic contingency** and **negative effects of parental directiveness** on normal language learning children (Conti-Ramsden, 1994). In particular, many studies have found a positive correlation between the various measures of semantic contingency in caregiver speech to children and the children's rate of language development. Language acquisition is facilitated by adult utterances that are on the same topic as the child's utterances, and continue and expand upon the point made by the child (Cross, 1984). A negative correlation has been found between measures of directiveness (e.g. commands, requests, instructions) and rate of language learning (Lieven, 1984). Language acquisition is impeded by a high frequency of adult utterances that change the topic or that do not relate to the child's focus of attention, ongoing activity or previous utterance. Thus the children of caregivers with a highly directive style typically develop speech/language in a delayed manner since the caregivers frequently shift the child's attention or activity (Snow, Midkiff-Borunda, Small & Proctor, 1984).

The effects of contingency versus those of a highly directive style, are such that a child-centred interaction style is beneficial in language learning. An adult who for example, expands a child's utterance allows the child to determine that which is talked about and

how, while a more directive style will tend to reflect the adult's concerns more than those of the child (Lieven, 1984).

Adults therefore need to provide many expansions and semantic extensions of the child's utterances. In so doing, the adult utterances are both easier to understand and more interesting since they are closely tied in topic to the child's own previous utterance (Snow et al, 1984). Caregiver utterances that immediately follow the child's utterances, provide the child with "a great deal of highly salient syntactic and semantic information within a narrowly focused conversational frame" (Lieven, 1984:115). According to Snow et al (1984:74), semantic contingency is "not an exclusive route to language but it is a very strong and reliable facilitator of language development for those children who have access to it."

With regard to **mode of communication**, since most deaf children are born to hearing parents, manual communication would not normally be used in their homes (Gregory & Barlow, 1989; Wood, 1991). Musselman and Churchill (1991) assume that communication mode would have a direct effect on maternal control. Similarly, Rea et al (1988) believe that the communication mode employed by mothers of deaf children can determine whether the interactions will be positive or negative. They report findings suggesting that use of sign language results in more positive interactions.

Gregory and Barlow (1989) assert that the problem for deaf children of hearing parents can be seen, not in terms of the limited input of (sign and/or spoken) language that they experience, but with respect to the difficulty they have in establishing pre-linguistic skills that are necessary for later language development. It is proposed here that intervention cannot simply address sign language training for hearing caregivers. Rather, caregivers require sign language training in addition to support regarding intuitive parenting behaviours, and training in less intuitive communication behaviours that are more intuitive for deaf parents who are native signers.

In agreement with Lederberg and Prezbindowski (2000), hearing parents of deaf children that participate in intervention, need to be informed that intuitive parenting can support

the typical growth in many areas of development. In this way, parents are empowered to face the challenge of learning less intuitive ways of creating a language-rich environment for their children. Some of the less intuitive behaviours have already been addressed, including aspects of attention and the use of the visual channel. These and other communicative behaviours are highlighted in interactions between deaf parents and their deaf children who sign.

3.1.2 Input and Interaction in Deaf-Deaf Dyads

A small but conceptually important proportion of the population of deaf children (< 10%) comprises those with deaf parents, most of whom use sign language (Spencer, 1996). A great deal of research has been carried out on Dd dyads, particularly on the sign language acquisition of these deaf children and on communicative interactions in Dd dyads (see Meadow, 1980; Bellugi, 1988; Newport & Supalla, 1998; Gregory & Barlow, 1989).

In contrast to the problems facing Hd dyads in communicative interaction, interactions between deaf parents and their deaf children are generally positive (Gregory & Barlow, 1989; Erting, Prezioso & Hynes, 1987). These positive interactions illustrate the importance of the use of Dd dyads as teaching or, rather role models. As noted by Erting (1988), deaf children need deaf adult role models. Several researchers have acknowledged that the study of characteristics of Dd interactions, has important implications for understanding the development of young deaf children and for how **intervention** may be structured so that models to assist hearing parents may be devised (see Koester, 1992; Henderson & Hendershott, 1991).

According to Henderson and Hendershott (1991) the participation of deaf adults as well as their perspectives and insights, are crucial in terms of the sociological implications of poor communicative interaction on families comprising a deaf child. Similarly, Van der Lem (1987) recommends that deaf people engage themselves in early intervention programmes and in schools for the deaf.

Gregory and Barlow (1989) assert that one can learn a great deal from deaf mothers as to how to establish good communication with deaf children. Erting, Prezioso and Hynes (1990:106 in Koester, 1992) assert that deaf mothers have the cultural knowledge about how to interact with their infants in different environments. Moreover, during the first few months of life, deaf infants who have deaf signing parents are "acquiring the necessary foundation for further language socialization through interaction that is structured according to the requirements of a visual-gestural language".

Similarly, Gregory and Barlow (1989) argue that deaf mothers seem to be better than hearing mothers at establishing **pre-linguistic skills** such as those of joint reference, role reversal, and turn-taking, that are necessary for language acquisition and development. Deaf mothers seem to establish better communication even in the book reading situation. Gregory and Barlow (1989) conclude that deaf mothers are better at facilitating the mutually **contingent** activities that are prerequisites of language development.

Spencer et al (in press in Koester, 1992) noted that Dd dyads have been shown to display highly **responsive** and **contingent** interaction patterns. Koester (1992) points out however, that this is usually achieved by means of strategies that are not commonly observed among hearing parents of deaf children. For example, the parent follows the child's lead as a means of synchronizing gaze (Swisher, 1991). Unlike the case in hearing-hearing interaction, gaze functions as a channel for receiving information and as a signal in turn-taking in deaf-deaf interaction (Swisher, 1991). A further example is that of deaf mothers using certain AG strategies more frequently than hearing mothers, such as tapping or waving, or exaggerating their signs (Prendergast, 1992, 1994 in Prendergast & McCollum, 1996).

Research shows that deaf mothers who are native signers make modifications in their signing that seem analogous to the **prosodic characteristics** used by hearing mothers in 'motherese'. For example, infant-directed signing contains signs that are larger, slower and repeated more frequently than adult-directed signing (Erting, Prezioso & Hynes, 1994 in Lederberg, 2002). These prosodic modifications serve an attention-getting purpose (Masataka, 2000 in Lederberg, 2002). Additional strategies used by deaf mothers

that make language more visually accessible seem unique to sign language. These include for example, moving a sign's location (on the child or in the child's line of vision), waving, or moving objects near the mother's face (Lederberg, 2002). Hearing mothers of deaf infants have been observed making these modifications but at a lower frequency compared to deaf mothers (Jamieson, 1994).

Lederberg (2002) therefore asserts that while hearing mothers may intuitively make appropriate structural changes to their language addressed to their deaf children, important prosodic modifications may not be intuitive. This may well explain why language is not as visually accessible to deaf children of hearing parents as it is to deaf children of deaf parents (Harris, 2001 and Lederberg & Everhart, 1998 in Lederberg, 2002).

In terms of **eye gaze**, Erting et al (1990 in Koester, 1992) state that sign language communication by a deaf adult to an infant is similar to vocal baby talk in that it is simplified and more repetitious. Yet, it is also more influenced by the partner's eye gaze direction than is sign communication among deaf adults. From a communicative point of view, an important difference between vision and hearing is that "visual reception requires a directional focus, whereas hearing does not" (Swisher, 1991:111). A sequential visual approach to communication is imperative for deaf people using sign language yet most deaf children are born into hearing families who have no orientation towards visual communication and its requirements (Swisher, 1991).

Finally, numerous gains for the deaf child of deaf parents who use sign language for communication have been documented (see Magnuson, 2000; Watkins, Pittman & Walden, 1998). A large number of studies have compared developmental differences between deaf children of deaf parents and deaf children of hearing parents and pointed out positive outcomes for the former (see Henderson & Hendershott, 1991; Hadadian & Rose, 1991). Differences in achievement may be attributed primarily to parental acceptance of deafness and of the child, as well as early and consistent use of a **natural language** such as sign language (Quigley & Paul, 1994 in Takala et al, 2000). Positive outcomes for deaf children of deaf parents, such as being more advanced in language,

cognition, social and academic skills (e.g. Meadow, 1980, Zweibel, 1987 in Prendergast & McCollum, 1996), have resulted in the study of the characteristics of interactions in deaf-deaf dyads (Prendergast & McCollum, 1996).

Clearly, there are a great number of possible difficulties in communication facing hearing caregivers and their young deaf children. The frequency and nature of these difficulties as well as issues relating to intuitiveness of communication behaviours highlight the dire need for intervention for both the caregivers and their children. In sum, this chapter has described pertinent aspects contributing towards an apparent impoverished language model for deaf children of hearing caregivers and communication breakdown between these caregivers and their children. It was established that rather than focusing upon these negative aspects, it is important to support the natural or intuitive communicative competencies of caregivers in terms of their role in communicative transaction and interaction, and to address less intuitive behaviours that are necessary for use with profoundly deaf children. Deaf parent-deaf child dyads were highlighted as effective role models in intervention in terms of language and communication.

CHAPTER FOUR:
METHODOLOGY

This chapter presents the aims of the study, methodological design, subject selection criteria and description of subjects of this study. In addition, aspects of the development, implementation and evaluation of the communicative intervention programme are presented and the methods of data collection, treatment and analysis employed in evaluating the programme are described.

4.1 AIMS OF THE STUDY

The primary aim of this study was to determine the effectiveness of a communicative intervention programme for hearing caregivers and young deaf children who use sign language as their primary mode of communication. This programme was designed to empower hearing caregivers of young deaf children and to enhance the dyadic communicative interaction. Empowerment of the caregivers relates specifically to communicative interactions with their deaf children and confidence in making decisions regarding the development of their children.

More specifically, the aims of the study were as follows:

a) To determine the effectiveness of a communicative intervention programme within a developing context using an ecological framework. The programme was developed for and implemented with caregiver-child dyads from socio-economically disadvantaged communities. In addition to the child's deafness, the diversity of language and culture for, as well as the influences of socio-economic factors on, traditionally disadvantaged population groups were considered.

b) To determine programme effectiveness by means of multiple measures in an evaluation process.

4.2 RESEARCH DESIGN

A short-term longitudinal, before-and-after group design was employed in the implementation and evaluation of the intervention programme. Individual caregiver-child dyads participated in group, as opposed to individual, intervention. The programme was implemented in 12 weekly five-hour sessions, constituting 60 hours of intervention over a three-month period. The research design was that of a simple before-and-after study.

The evaluative research design was of an observational nature in a within-subjects[8] investigation. Observational studies appear to be the most common type of methodology employed in investigations involving dyadic interactions (see Connard & Kantor, 1988; Gaines & Halpern-Felsher, 1995; Smith-Gray & Koester, 1995). Observations were made of caregiver-child interactions during play and storytelling and recorded on videotape before and after the institution of the programme. The same caregiver-child dyads were exposed to this programme. These before-and-after observations were compared. The group of dyads was its own control.

A within-subjects design was employed because firstly, the same dyads were employed over time. Moreover, the communicative interaction between each particular dyad was of focus rather than similarities or differences across different dyads. Secondly, a within-subjects design was necessary in order to investigate changes in communicative behaviours over time.

The design employed for the before-after comparison regarding communicative transaction and interaction may be classified as quasi-experimental in that pre- and post-intervention data was collected for the subjects receiving the experimental treatment but a control group was not employed (McLean & Cripe, 1997). Careful attention to the

[8] The term 'subjects' is used in this study in a general sense primarily as it relates to a quasi-experimental design. Specific reference is made to the caregiver-child dyad, to the caregivers, or children as is necessary.

possibility of confounding is necessary when interpreting the results of a quasi-experiment (Abramson, 1998).

Quasi-experiments, that do not fully satisfy the criteria of a sound experiment, are usually performed because a better design is not feasible (Abramson, 1998). An attempt was made to employ a control group. However, the primary reasons for the absence of control-group comparisons in this study was that of ethical justification regarding the temporary denial of intervention to those in need once a programme had been introduced, and of randomization.

With regard to temporary denial of intervention, Hennekens and Buring (1987), for reasons of both ethics and feasibility, assert that there must be sufficient doubt about the intervention under investigation to allow withholding it from subjects. As highlighted by Hennekens and Buring (1987:180), "therapies known to be beneficial...should not be withheld from any affected individual". Similarly, Bricker and Sheehan (1981 in Seitz & Provence, 1990) argue that programmes cannot ethically withhold educational or medical services from children in need of assistance if resources are available for such intervention. A central problem however, in evaluating programmes for disabled children, whether they are child- or family- focused, is the extreme difficulty in obtaining control groups. Ethical problems arise in the creation of control groups of un-served parents with disabled children (Seitz & Provence, 1990). Limitations of early intervention programmes relating to experimental rigour, sample sizes and/or design, and outcome measurement, are difficult to resolve in view of practical and ethical expectations to provide a service that is perceived as needed if not essential (Simeonsson & Bailey, 1991).

With regard to randomization, even random assignment to different intervention groups was challenging in view of the lack or rather the absence of formal local intervention programmes for hearing caregivers and their young deaf children from socio-economically disadvantaged communities.

Use of a sufficiently large sample constituting the experimental group that could enable the in-depth nature and scope of the treatment and analysis of communication and sign language data in this study, was felt to be adequate for the purposes of this study. One group of subjects allows the researcher to make more measurements, identify more information, and delve more deeply into the activities relating to implementation of the programme (Fitz-Gibbon & Morris, 1987). Consequently, the evaluator implementing such a design should concentrate on describing the programme - outlining in detail the materials, activities, and other aspects. These can then be related to the theoretical base underlying the programme – the rationale for the means by which the programme was supposed to achieve its objectives (Fitz-Gibbon & Morris, 1987).

In spite of these reasons for the absence of a control group, the researcher acknowledges that one of the greatest dilemmas for those evaluating early intervention programmes is how to measure programme effects in the absence of research designs that randomize or rigorously select control groups. Documenting and analyzing change is a difficult task in that causal inferences are not readily apparent. Children and families naturally change over time, and numerous influences can bring about the change. Such influences include for example, environmental, biological, and support services influences (Hauser-Cram, 1990). It is necessary then to distinguish the effects of the intervention from the changes that would have occurred regardless of the intervention. According to Rossi and Freeman (1993) before-and-after designs usually cannot differentiate between the effects of extraneous factors and the effects of the intervention, namely net outcomes. Consequently, estimates of the intervention's net effects as opposed to the overall or gross effects are obscure.

Effects of the intervention, of extraneous factors, and of the research design, contribute towards overall outcome. Rossi and Freeman (1993) discuss various possible extraneous confounding factors that may influence the behaviour or conditions at which the programme being evaluated is directed. Applicable to this study, are the extraneous factors of subject selection and endogenous change within clients and in the programme's social and historical context.

With regard to subject selection, assessment of the programme's real effect is believed not to be complicated by participant selection in that the participants included caregivers of deaf children referred to a centre for hearing-impaired and deaf children within a tertiary institution. Attrition in programme participation resulted in the exclusion of data. A small number of dyads did not complete the programme primarily due to factors relating to poverty, seeking employment, and family responsibilities in a disadvantaged socio-economic context.

Endogenous change refers to effects as a result of social programmes that are carried out in environments in which ordinary or 'natural' sequences of events influence the outcomes of interest (Rossi & Freeman, 1993). Possible changes in caregiver use of sign language were to be expected in the case of those children who were exposed to sign language in an educational setting during the intervention. Children older than three years of age were to be enrolled in a pre-school for deaf signing children during the course of the programme as part of educational advocacy. It was surmised that, as a result, these caregivers may have obtained sign language and communication skills in ways that did not involve the programme. This issue is mentioned in Chapter Six regarding thematic analysis in the evaluation process.

Maturational trends were considered a further possible endogenous change influencing the outcome. The natural development in child language learning and adult learning cannot be disregarded in evaluation. In view of the short-term nature of the programme, any effect of maturation would have far less of an impact than that of a long-term intervention programme. Moreover, an effect was minimised since the focus was on the training[9] of caregivers in a parent-child interaction approach, as opposed to a child-centred approach.

It follows that in before-and-after designs any identified effects cannot be attributed with

[9] The term 'parent training' for the purposes of this study is intended in an educational and supportive approach to intervention in which parents are acknowledged as critical members of the intervention team. This term is used interchangeably with 'communicative intervention programme'. The caregivers in this study referred to the programme as 'parent training' (see also Chapter Six).

certainty to the particular programme, making generalization of findings from one programme to another risky. However, careful evaluations can produce valuable data on effectiveness for individual programmes to consider (Jacobs et al, 2000). A challenge lies in providing statistical evidence that improvements shown for participants are due to the intervention itself. Yet data collected in before-and-after studies can strongly support the *assumption* that observed changes from pre- to post- intervention were due to the intervention and not to other, uncontrolled factors (McLean & Cripe, 1997). This is believed to be the case in this study. Moreover, threats to validity that surface in less rigorous studies, can be minimized through the programme staff's application of their knowledge of the context and the history of the programme (Jacobs et al, 2000).

Both descriptive and inferential statistical procedures were employed in determining the effectiveness of the programme on the basis of communicative transaction and interaction data. Valuable data on effectiveness was sought in that descriptive data was deemed critical in order to gain insight into the richness of the wide range of language and communication parameters demonstrated by the caregivers with their children. Hence, the quantitative data were analysed qualitatively. Furthermore, a broader perspective on intervention necessitated a broader perspective on evaluation. Therefore, in addition to a comparison of before-after changes in communicative transaction and interaction, the components of the programme and views of the caregivers relevant to the programme were examined by means of qualitative analysis of responses in an evaluation questionnaire and focus group interviews conducted post-intervention. In this way, qualitative data contributed towards evidence of change as a result of the intervention.

Coulson, Goldstein and Ntuli (1998) point out the usefulness of qualitative research in an investigation of people's opinions, perceptions and experiences. Qualitative research methods enable the researcher to study selected issues in depth and detail (Patton, 1990).

Qualitative inquiry designs cannot be completely specified in advance, but rather unfold as the investigation runs its course (Patton, 1990). In this study, design flexibility allowed for exploration of factors arising for possible inquiry. As noted by Katzenellenbogen, Joubert and Yach (1991), there is also space in this type of research structure to explore

new information. The particular methods used in order to obtain the necessary information allowed the researcher to gain access to the respondents' views and experiences expressed in their own words (Minichiello, Aroni, Timewell & Alexander, 1990).

Evidently, this study constituted both qualitative and quantitative research methods as part of an evaluative research design. From a theoretical and philosophical persective, the research spans both the constructivist-interpretive and positivist/post-positivist research paradigms. The traditional positivist and post-positivist paradigms provide the backdrop against which other research paradigms and perspectives operate. The positivist/post-positivist traditions in the physical and social sciences take on a relatively rational view of the social world. Research methodologies assume an objectivist epistemology. Experimental and quasi-experimental designs predominate. Variables are measured and analysed quantitatively. The research inquiry thus takes on a verificational approach and there is an emphasis on reliability, validity, prediction, control and a building block approach to knowledge. Within the constructivist-interpretive paradigm, the research tries to understand the social world as it is from the perspective of the participants, hence an interest in subjective worldviews. Research methods typically include face-to-face interactions such as interviews and observation, and an emphasis is on description of the subjective worldviews. Traditional positivist criteria of reliability, internal and external validity are replaced by such terms as trustworthiness (Denzin & Lincoln, 2005; Rossman & Rallis, 2003).

4.3 SUBJECTS

4.3.1 Sample size

Sixteen hearing caregivers and their Deaf children participated in this study. A review of the research in this field of intervention revealed that sample sizes have ranged from single-case studies to a sample size of approximately 20 in the large-scale, long-term investigations.

Control group subjects were not employed in this investigation of 16-multiple case studies in which an introspective examination was carried out for each dyad as well as across the group. In the main, ethical considerations could not allow for the control group subjects to be placed on a waiting list for the intervention, as discussed in section **4.2**.

Moreover, in light of the introspective approach taken in this study, difficulty in the identification of caregiver-child dyads that met the subject selection criteria was compounded by the need to match each caregiver and child within each dyad of the experimental with those of a control group. It was imperative however, that variables of both the caregiver and the child were to be matched in order to control extraneous variables. Variables of caregivers could not be matched primarily because of the limited number of potential control subjects. Child variables to be matched included the child's age, age of onset (pre-lingual) of hearing loss, severity of loss and use of amplification.

4.3.2 Subject Selection Criteria

The following criteria were applied in the process of subject selection:

4.3.2.1 Caregivers

(a) The caregivers were required to be primary caregivers of congenitally or pre-lingually deaf children of a severe-profound degree. For purposes of this study, 'primary caregiver' was defined as the person who is primarily responsible for the care and nurturing of the child (MusselWhite & St Louis, 1982). According to Callister and Podmore (1995), there are a variety of definitions of primary caregiving and the term primary caregiver appears to be increasingly used when discussing people other than the child's mother who are primarily responsible for the care of the child.

(b) The caregivers were to be members of a socio-economically disadvantaged community. Indicators of a disadvantaged community included primarily a context of poverty characterised by unemployment, nature of housing, household income and education level. This population has traditionally been under-served and service delivery to children who have hearing loss remains problematic (Louw & Avenant, 2002).

(c) In this study, the caregivers were required to have had no previous exposure to an intervention programme that focuses upon communication and sign language for use with the deaf child.

(d) The caregivers were required to have normal hearing acuity.

(e) The caregivers were to have no known neurological disorder, visual impairment or any (physical) handicapping condition of the upper extremities. These characteristics are likely to influence the acquisition and use of sign language.

4.3.2.2 Children

(a) The children were required to have been congenitally or pre-lingually deaf with a maximum onset age of two years. According to Swisher (1984) loss of hearing before two years of age is the conventional cut-off for 'pre-lingual deafness'. Boothroyd (1993) has defined pre-lingual deafness as falling into two categories, namely congenital and early (birth to one year) and late (one to three years).

Profound deafness acquired before basic spoken language skills are established – pre-lingual deafness – has far more severe consequences than deafness acquired after the establishment of these skills – postlingual deafness (Boothroyd, 1993). In fact, it has been strongly suggested that pre-lingually and postlingually deafened children be viewed audiologically and linguistically as two distinctly different groups (Vernon & Alles, 1994).

(b) Degree of hearing loss: Children were required to have a bilateral, severe-profound hearing loss (that is, greater than 80dBHL). Paul (2001) suggests that children in the profound audiological category are the only ones who should receive the label 'deaf' in that they receive a fragmented, incomplete auditory message or no message at all, with or without amplification. The majority of these children rely on some form of signing in order to receive and express information (Paul, 2001).

(c) The children were required to be between the ages of one and five years at the start of the investigation. The use of the above-mentioned stipulated age range was determined for several reasons.

The first five years are critical years in a child's acquisition of language and communication (McLean & Cripe, 1997). The critical or language formative years for language development appear to be those between birth and five years (McNeill, 1966 in Brasel & Quigly, 1977; Gathercole, Willis, Emslie & Baddeley, 1992 in Hansson, Forsberg, Lofqvist, Maki-Torkko & Sahlen, 2004). In fact, Boshner and Albertini (1988) assert that age strongly influences the acquisition of language. The effects of age have been explained in terms of a critical period for primary language acquisition that extends approximately from two to nearly fifteen years of age (Lenneberg, 1967 and Curtiss, 1977 in Boshner & Albertini, 1988). The stipulated age range is appropriate in terms of the language and communication parameters under investigation in this study, and it takes into consideration the need to serve children older than three years of age in terms of the traditional interpretation of early intervention.

(d) The children were to have no known neurological or behavioural disorder. This characteristic would influence the acquisition of sign language.

(e) The children were to have no visual impairment or any (physical) handicapping condition of the upper extremities. These characteristics are likely to influence the use of sign language.

(f) The children were to be participating in formal intervention on communication and sign language with their caregivers for the first time.

(g) The children were to have no record of attendance at a school for deaf signing children prior to participating in the programme. This previous school attendance would introduce extraneous factors to the outcome of the intervention.

4.3.3 Study Population and Location of Subjects

The target population of this study comprised young severe-profoundly deaf children and their hearing caregivers who were referred to a diagnostic and rehabilitation centre for hearing-impaired and deaf children within a tertiary hospital setting. The services provided by this particular centre are available to children younger than 18 years of age.

4.3.4 Subject Description

An initial interview was conducted with each primary caregiver in which information pertaining to subject selection criteria was obtained.

An interview questionnaire was designed in order to obtain the information. The questionnaire was compiled primarily on the basis of an interview developed by Bernstein and Barta (1988) for their survey on parents and professionals regarding intervention programmes for parents of hearing-impaired children. In addition, certain questions were adapted from interview and questionnaire schedules applied previously in the field of hearing impairment and interactions between conversational dyads (e.g.

Sullivan, Vernon & Scanlan, 1987; Ritter-Brinton & Stewart, 1992). Finally, guidelines on questionnaire design were followed (e.g. Joubert & Katzenellenbogen, 1997).

Open-, closed- and partially closed- ended questions were employed in a semi-structured interview. Six closed-ended questions relating to socio-economic status were presented to caregivers during the interview. An extract from the questionnaire that includes the socio-economic status questions is presented in **Appendix 1**.

Face-to-face interviews were conducted in each of the caregivers' home languages, prior to the intervention programme. The researcher, who is bilingual in English and Afrikaans, conducted all interviews with the first-language English and Afrikaans speakers. An English-isiXhosa interpreter assisted with the first-language isiXhosa-speaking caregivers. Caregivers were interviewed in a quiet room at the site intended for the implementation of the programme.

The interviews were audio tape-recorded to allow for a natural discussion and more accurate data recording and analysis.

4.3.4.1 The Caregivers

For the purposes of this study, the 16 caregivers will hereafter be referred to as C1, C2, C3 and so forth, to refer specifically to the caregivers rather than the dyads. Caregiver socio-demographic information is outlined in **Appendix 2**.

As can be seen in Appendix 2, the ages of the caregivers range from 18 years to 55 years, with a mean age of 31.8 years. The large age range is due to two of the caregivers being the grandmother as opposed to the mother of the child. All but one of the caregivers was a member of the Deaf child's family. This caregiver was a friend of the child's mother who was a single parent living away from her child for the purposes of employment.

C1 to C9 were Black isiXhosa caregivers while C10 to C16 were Coloured English and/or Afrikaans caregivers. All caregivers reported the use of speech and gesture such as pointing with their children. In addition, C10, C12 and C15 were (according to their reports) making use of a home-made signed system with their children at the commencement of the study.

Particular information collected in the initial interviews indicated a context of poverty and socio-economic disadvantage. The caregivers and their children were members of a disadvantaged community in terms of socio-economic status, racial affiliation, and cultural factors relating to a post-Apartheid South Africa. The primary indicators of low socio-economic status included unemployment, housing, household income and education level. The majority of the caregivers were unemployed. Of the three caregivers who were not unemployed, one was a domestic worker, one earned an income for caring for the Deaf child, and one was a student nurse earning income as part of her training. Unemployment clearly contributed to the overall low monthly income per household, as indicated in Appendix 2, in the South African monetary currency of the Rand. This income comprises in certain cases, the income of employed family members and/or money received through a particular social support grant. This income may be regarded as barely at a subsistence level.

In addition, the caregivers and their Deaf children were living in a variety of dwellings including those owned by other family members, those provided by the council, and informal dwellings in an informal/squatter settlement. Caregivers indicated the number of persons and the number of rooms within the dwelling, for the purposes of the socio-economic questions asked during the initial interview. As indicated in Appendix 2, the number of people living in each dwelling ranged from three to twenty people. A crowding index was not calculated in view of the contrasting nature of the rooms per dwelling and sleeping locations. Abramson (1990) refers to a crowding index calculated as the mean number of persons per room in a housing unit. This author cautions however, regarding the nature of the rooms excluded (e.g. toilet, and kitchen).

The caregivers attained education levels between Grades 5 and 12[10] inclusive. The level of education of the caregivers in this study is an important variable, particularly as an indicator of socio-economic status. Several researchers agree that caregiver's educational level is an important factor in this field of research and parent education has often been used as an indicator of the socio-economic level of the families (e.g. Rea et al, 1988; Kluwin & Gaustad, 1991).

Socio-economic variables, including education level and unemployment, relate to levels of empowerment. Education provides the individual with the opportunity to gain knowledge and develop an ability to reason and think critically. Haralambos and Holborn (1991) state that education involves the acquisition of knowledge and the learning of skills. Furthermore, education usually encourages the shaping of beliefs and moral values. It is the opinion of the researcher that caregivers who have attained a low level of education may not see themselves as having the knowledge to make assertive decisions in their child's intervention process. Decision-making and responsibilities such as learning a new language, namely sign language, may well present as threats to the confidence of the caregivers.

Indeed, employment as a sole factor cannot determine levels of empowerment. Employment may however influence the individual's level of empowerment. Fagin and Little (1984 in Haralambos & Holborn, 1991) argue that employment provides one with a sense of identity of who one is and what one's role is in society. Consequently, the majority of caregivers in this study, being unemployed, may be less empowered than others who are employed. Michelson (1998) found that both education and employment were related to empowerment in her efficacy study on training programmes for caregivers of hearing-impaired and deaf children in the Western Cape.

[10] In South Africa, primary education extends over seven years. It consists of the following school classes: Grade 1 and 2 and Standards 1 to 5 (now called Grades 3 to 7). Secondary education follows on primary education, extending over another five-year period. It consists of Standards 6 to 9 and Standard 10 or matriculation (now called Grades 8 to 12) (Statistics South Africa, 1998).

4.3.4.2 The Children

Biographical and clinical information for the children participating in this study is presented in **Appendix 3**. This information was collected from caregivers during the initial interview as well as from the children's diagnostic records.

As can be seen in Appendix 3 nine boys and seven girls participated in the study. Ages at commencement of the study ranged from 13 months to 4.11 years, the mean age being 3.18 years. Rather than adhering to the traditional interpretation of early intervention being offered to children younger than 3 years of age, the age-range of this study included 4-year old children. The primary reason is the lack of services for those historically disadvantaged people, including the dyads of this study. The presence of profound deafness is confounded by the context of socio-economic disadvantage for Black and Coloured people in post-Apartheid South Africa (Louw & Avenant, 2002). Once again it is important to point out that Black and Coloured South African families including a deaf child are not only affected by the child's deafness and the implications thereof. These caregiver-child dyads and their families are adversely affected by the lack of services – appropriate services – and by their social and economic disadvantage. Inclusion of children older than four years of age would necessitate a particular content and nature of intervention that meets the needs of caregivers of children of varying ages.

An additional factor in the inclusion of children older than three years of age is that formal primary schooling begins at six years of age in South Africa, indicating that formal educational intervention may only commence at this relatively late stage. Moreover, the concern is whether the deaf child from a disadvantaged community will attend a school for deaf children.

Caregivers reported the child's age at which a possible hearing problem was initially detected, except for one of the two grandmothers (namely, C13) who became the child's primary caregiver when the child was 2 years of age, and the caregiver not related to the child (namely, C7). For the remaining subject sample Appendix 3 indicates the period of

time lapsing between initial detection and initial diagnosis of deafness of up to one year. The primary reason for a delay in formal diagnosis was that of poor access to appropriate health services. Similarly, a delay between diagnosis and formal intervention is indicated for some of the children, in Appendix 3. A delay between detection and formal intervention often implies that language development for hearing-impaired and deaf children is remedial in nature (Goppold, 1988).

The children did not receive adequate benefit from amplification and their primary mode of communication at the start of the study was gesture.

4.3.5 Caregiver Consent

Prior to the commencement of this study, the Research Ethics Committee of the University of Cape Town passed the research proposal as one that proposes an ethical study.

Verbal consent from all caregivers with regard to participation in the parent-training programme and evaluation thereof was obtained prior to data collection and the implementation of the programme. The purpose of the study and the procedures (e.g. videotaping, interviewing, training in sign language and communication strategies) to be undertaken were fully explained to the caregivers prior to their giving of consent. In addition, verbal consent was obtained prior to any data collection and programme implementation and later confirmed regarding the use of photographs of caregiver-child interaction from a research perspective. Anonymity was guaranteed.

Informants in qualitative studies must be provided with sufficient background regarding the research project (Krueger, 1994) and voluntary consent of all informants is absolutely essential in social research (Dooley, 1995). Prior to administering the evaluation questionnaire and conducting the focus group interviews, the purpose of the questions asked and of resultant discussions, as well as the procedures to be undertaken were fully

explained to all informants. In this way, the caregivers were aware of the broader implications of the questionnaire and the focus group interviews.

Participation confidentiality was explained and ensured by the researcher and programme personnel prior to the caregivers giving their consent (Swartz, 1998). The participants of each focus group were familiar with one another through attendance at the parent-training programme, as well as familiar with their group facilitator through the service delivery process with the Deaf child. In view of participant familiarity, confidentiality was requested but cannot be guaranteed in focus group interviews (Patton, 1990).

Furthermore, the dissemination of the findings was discussed with all informants and consent was obtained. This includes the use of video data and photographs.

4.4 Development, Implementation and Evaluation of the Communicative Intervention Programme

4.4.1 Programme Development and Implentation

The goals and objectives of the communicative intervention programme, principles, nature, components, delivery process and content of the programme are presented in **Appendix 4**. This section of 4.4.1 serves to outline some of these aspects involved in programme development and implementation.

The goals and objectives of the intervention programme embrace an ecological perspective. The focus of the programme was on the development of pre-linguistic communication skills, language facilitation, the acquisition and use of sign language of the caregivers, provision of support, information sharing and educational advocacy. In addition to the child's deafness, the diversity of language and culture for, as well as the influences of socio-economic factors on, traditionally disadvantaged population groups were considered. In line with a broader ecological perspective, the principles believed to favour successful intervention with caregivers and their children in a developing context

include caregiver-child interaction; competence of a comprehensive team; cultural competence; consideration of the social and environmental context; a working partnership; involvement of Deaf adults; empowerment; continuity of care; and development of appropriate resource materials.

A naturalistic approach to intervention that followed a conversational model was applied in this study. A naturalistic approach recognises that children learn language, and hence communication skills, through naturally occurring interactions with their caregivers (Rossetti, 1996). The programme was typically delivered over a three-month period constituting 12 weekly group sessions of five-hour duration. The content included the teaching of sign language and reflected a conversational model of langage intervention. The content allowed for a short-term intervention for caregivers who had no previous exposure to formal communicative intervention. A certain amount of flexibility was necessary in implementing the programme in order to follow the specific needs of the different groups of caregiver-child dyads.

4.4.2 Programme Evaluation

The lack of meaningful communication between hearing caregivers and their young deaf children who have had no previous exposure to formal intervention has been well documented and highlighted in this study. Moreover, intervention that focuses on caregiver involvement and training has proved to be particularly beneficial in bringing about positive change in caregiver-child communicative interactions. The communicative intervention programme is one such intervention. In addition, this programme acknowledged the importance of child development by means of an emphasis on interactive qualities that research suggests are associated with child development, and by taking on an ecological perspective looking at the broader context. The extent of the benefit derived from caregiver-child dyadic participation in the programme was to be determined by means of an evaluation process.

The **type of the evaluation** used in an evaluation process is determined by the purposes for undertaking the evaluation, the questions to be answered, particular research methods

used, and programme characteristics being assessed. Most programmes will, and should, involve both process and outcome evaluation activities (Jacobs et al, 2000). In this study, multiple measures were employed, with an emphasis on outcome[11] rather than on process alone.

Outcome evaluation provides evidence of the benefits, or absence of benefits, of a programme. Information relating to input (i.e. various elements of the programme), to process (i.e. implementation), and to outcome (i.e. effects on participants) was collected. Data are reported with a view towards the importance of generalisability of the programme, should the findings be positive. This type of evaluation is referred to as 'need-based' in that it produces information that responds to social needs (Hauser-Cram, 1990). The programme was evaluated internally in its local context rather than at the level of broad systematic change in human services.

The **purpose** of the evaluation was to determine an estimate of the effect of the intervention programme. Such estimates cannot be made with certainty but rather with varying degrees of plausibility that are determined by the degree of rigour employed in the research design (Rossi & Freeman, 1993). Some areas of effect that are frequently described in the literature in the field of early intervention, include the development of positive parent-child interactions; reduction of parenting stress; and strengthening of parental and familial social support networks (Krauss & Jacobs, 1990).

A 'good' outcome is one in which the aims of intervention have been achieved (Johnson, 1997). The outcome evaluation was to determine whether, and to what extent, the desired programme goals and objectives had been attained. In this way, the effects of the programme could be ascertained (i.e. effectiveness). The evaluation would also elicit feedback from the caregivers regarding their satisfaction with the service. Finally, the yielding of information on the process and outcome of the programme was believed to be useful for interested **stakeholders**, including the programme co-ordinator and staff, the

[11] Some evaluators distinguish between outcomes – viewed as short-term results – and impacts – which are viewed as long-term effects of programmes (Jacobs et al, 2000). This study focuses on the short-term outcome and so the term of 'outcome' will be used as it applies to this study.

deaf children and their families, service providers and educational bodies involved in the management of childhood deafness.

Any evaluation process involves numerous **stages**. Ethical considerations are important at all stages from the outset during initial planning through to the dissemination of the findings (Posavac & Carey, 1997). Posavac and Carey (1997) combined the material based upon statements of ethical conducts in research and the descriptions of good programme evaluations, because they believe that ethics in evaluation means greater respect for research projects and honesty with data and money. Evaluators have the responsibility to provide clear, useful, and accurate information to stakeholders, and to seek ways to improve services for people. Ethics within the human services setting are complicated in that findings are of immediate relevance to organisations and clients. Poorly conducted evaluations have for example, influenced service provision to people in need and disrupted staff services (Posavac & Carey, 1997).

Numerous ethical principles were adhered to throughout this study, some of which were adapted from those employed by the American Evaluation Association (Posavac & Carey, 1997). Table **4.1** lists the various principles applied. Note that the researcher was primarily responsible for evaluating the programme.

Table 4.1: Ethical Principles applied in this study

1.	The researcher/evaluator conducted a systematic and observational inquiry into the particular aspects to be evaluated
2.	The researcher obtained consent from the caregivers prior to their participation
3.	The researcher ensured the honesty and integrity of the entire evaluation process
4.	The researcher respected the security, dignity and self-worth of the programme participants
5.	The researcher acknowledged and articulated the diversity of interests and values likely to be related to the family and community.

4.5 DATA COLLECTION

In order to address the aims of this study and obtain a representative sample of caregiver-child interaction, the analysis of interaction during play and storytelling was employed prior to and post-intervention. Collection of data prior to and following the dyads' exposure to the intervention allowed for an analysis of identifying the presence or absence of change in communicative transaction and interaction and for examining the nature of any change identified.

In order to validate the results of this study further, caregivers were presented with an evaluation questionnaire individually and they were required to participate in focus group interviews at the close of the study. Hence, the comparative video data and the post-intervention evaluation questionnaire and focus group interview data served to examine the effectiveness of the programme. **Figure 4.1** illustrates the stages of the collection of data that constituted the evaluative research design employed in this study. A description of the principles, tasks, materials and procedures employed in the collection of video data, evaluation questionnaire data and focus group interview data follows.

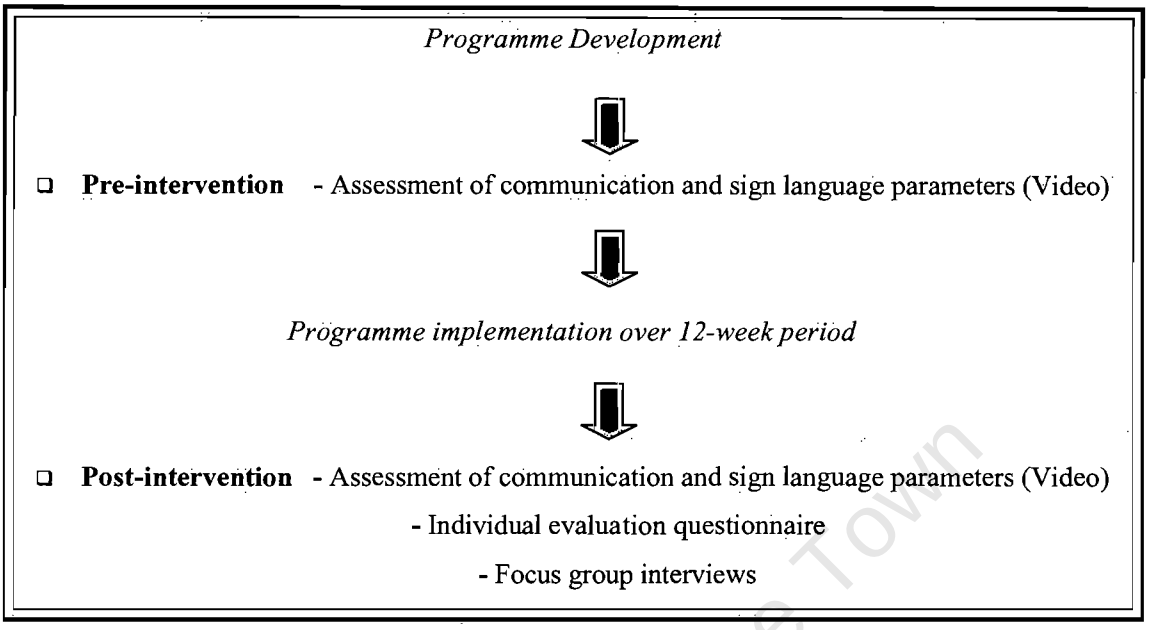

Figure 4.1: Stages of Data Collection

4.5.1 Principles underlying task selection and administration in the collection of video-taped dyadic interaction data

In general, there are many influences that create, restrain and limit communication, and these influences need to be carefully considered within the clinical context (Smith & Leinonen, 1992). The following principles were adopted in the task selection and administration process of video data collection.

- **Dyadic interaction**

The present study constitutes an in-depth evaluation of the reciprocal and dynamic interactions between caregiver and child. The primary focus of analysis was on the communicative contributions of each caregiver at an individual and at the dyadic level, over the duration of the time period of the intervention. Two levels of analysis were employed, namely one of communicative functions and aspects, and the other of the social interaction process. The former concerns the communicative functions and aspects

employed by the caregivers (e.g. labelling) while the latter concerns the caregivers' communicative functions and aspects in terms of the interaction between caregiver and child (e.g. expansion).

- **Naturalistic approach**

A naturalistic approach was central in the selection and administration of tasks for data collection. Appendix 4 indicates that this approach was employed in the intervention process as a whole, with its basis being formed by an ecological perspective.

A naturalistic approach recognises that children learn language, and hence communication skills, through naturally occurring interactions with their caregivers (Conti-Ramsden, 1993). Similarly, Owens (1999) asserts that data should be collected in natural settings where the child is communicating with natural communication partners such as parents, teachers and peers.

Consequently, the present investigation of caregiver-child communicative interaction involved purposeful activities in realistic, meaningful dyadic contexts rather than interventionist-directed procedures such as test-like situations. No formal assessment tools or high degrees of structure were employed.

Standardised tools of assessment may fail to describe the ability of an individual as s/he communicates in real-life contexts, in a functional way (Sohlberg & Mateer, 1989; in Owens, 1999). In order to minimize this possibility, and taking into consideration the paucity of sign language assessment tools (Fox, 1999) as well as their potential influence in terms of cultural factors (Bernstein, 1989 in Owens, 1999), a formal assessment tool was not employed in this study.

- **Context**

The context in which communication takes place is reported to shape the event (Smith & Leinonen, 1992). Few investigators have addressed the possible effects of context on characteristics of child-directed language (O'Brien & Nagle, 1987). In this study, the use

of a familiar conversational partner and age-appropriate, motivating activities were believed to contribute to a natural context. This included storytelling, play, conversational, and physical contexts.

A rationale for one of the tasks being that of storytelling is that it typically encourages rich communication. Bakker-Rennes and Hoefnagel-Hohle (1974 in O'Brien & Nagle, 1987) found mothers' speech to their children to be of greater complexity in non-caregiving contexts, particularly reading, than in caretaking situations.

The present study created play contexts by means of the provision of a set of toys. Clearly, this situation differs from that of free play. Child-directed language has been found to comprise a greater and more complex variety of linguistic structures in play episodes with a certain degree of structure as opposed to free play episodes Golinkoff & Ames, 1979 in O'Brien & Nagle, 1987).

The researcher acknowledged the socio-economic disadvantage of the caregivers and children in this study. Such disadvantage implies limited resources such as toys and books. The set of toys available for the interactions in this study primarily included those that represent highly familiar objects (e.g. eating and drinking utensils, cars) and people (e.g. mother and baby). In addition to limited resources, the researcher considered two primary factors that may influence the storytelling interactions. Firstly, inequalities of past educational practices may have limited the caregivers' exposure to books. Secondly, differing traditional practices relating to storytelling may apply to the caregivers in this study. The researcher was to be mindful of these possibilities.

With regard to conversational context, the use of a familiar, consistent communication partner for each child aimed to create a natural context thereby allowing representative sampling of the interaction process. Furthermore, creation of a meaningful context (Roth & Spekman, 1984) is important for analysis of the parent's functional use of language.

Finally, with regard to physical context, the caregiver-child dyads were observed and videotaped in a room at a centre for deaf children within a tertiary hospital setting. This environment was familiar to both caregivers and children.

- **Representative sample**

The present study aimed to examine caregiver-child interactions during play and storytelling that were as natural and thus as representative as possible. The three principles outlined above aimed to ensure that a representative sample for each of the sixteen dyads was obtained. Such a sample would minimize the need for repeated video recordings in order to ensure a reliable sample.

An additional factor believed to contribute to a representative sample of interactive behaviour was inclusion of a 'warm-up' period prior to video recording of the interaction. This period is discussed below in section **4.5.3.1 (i)** on duration of interaction.

4.5.2 Tasks and Materials for Collection of Data on Dyadic Interaction

4.5.2.1 Play and Toys

- **Play**

Play has been viewed as a vital and predominant activity of childhood (Segal, 1983). Several advantages of play, including language, communication, social and emotional benefits, have been highlighted in the literature. Routine interactions such as play have been found to be important in language acquisition and development (Cole & St. Clair-Stokes, 1984b). Play is extremely important for deaf children, as it is for other children, in terms of their social and emotional development (Cornelius & Hornett, 1990). Several researchers assert that communicative competence must be learned within the course of everyday care-giving and play transactions between child and caregiver.

With particular reference to play and interaction, analysis of videos of interactions between mothers and infants has provided insights into form/s of interactive play, and researchers have shown that interactive play has a crucial role in ongoing development

(Nind & Hewett, 1994). In agreement with Friel-Patti and Lougeay-Mottinger (1985), an intervention strategy that stresses the importance of preserving an interactive environment and natural consequences for facilitating language learning, must consider the role of play in children's learning. For further discussion of the benefits of play interactions, particularly child language, see White and White (1984) and Cornelius and Hornett (1990).

Consequently, examination of aspects of language and communication, including interaction, during everyday caregiver-child interactions such as play, is of vital interest and importance to those with particular concern for the development of deaf children.

- **Toys**

A set of age-appropriate toys was provided for play. This set included:

(a) Two clothed dolls, two baby's bottles, brush and comb

(b) A tea-set and eating utensils in a suitcase;

(c) A big green and a small blue car; and

(d) A colourful shape sorter;

The selection of the toys was carefully considered. All the toys were believed to be appropriate for pre-school aged children and to facilitate communication. Moreover, an attempt was made to include toys representative of highly familiar objects, and hence allow for familiarity of the toy items.

A study on the effect of play context on parents' child-directed language revealed a strong contextual component to parents' language. That is, different toys elicited a different pattern of speech from parents. Similarly, results of several research studies have shown different kinds of toys to be associated with different kinds of play behaviour in young children (e.g. Liss, 1981 and O'Brien & Huston, 1985 in O'Brien & Nagle, 1987). In view of these two findings, it was anticipated that the variety of toys selected for this study would elicit rich dialogue between the dyads.

According to O'Brien and Nagle (1987) play with dolls and vehicles created highly sex-role stereotypic play contexts and play contexts with shape sorters were found to be sex-role neutral. Both sex-role stereotypic and neutral toy contexts were possible in the present study with the inclusion of dolls, cars and a shape sorter.

Further rationale for inclusion of dolls are findings from the study of O'Brien and Nagle (1987) suggesting that children - both boys and girls - who play frequently with dolls may receive more opportunities to learn and practice language than do children who play with other toys. Finally, a tea-set and dolls have been found to elicit more caregiver language than other kinds of toys, in joint play (Prendergast & McCollum, 1996).

4.5.2.2 Storytelling and Books

- **Storytelling**

Storytelling for the purposes of this study was defined as those interactions between caregiver and child that involved initiating, maintaining, executing and stopping joint looking at picture books. The use of story 'telling' rather than verbatim reading was intended to encourage the individual communication styles of the caregivers. The researcher aimed to determine varying usage of language stimulation and discourse strategies. Since the intervention covered dyadic communication in various everyday, functional activities, it was of interest to observe whether or not caregivers were more able to move beyond the text, and use a greater variety of communicative functions and aspects, over time.

Storytelling interactions are useful from a research point of view in that storytelling is a naturally occurring situation where the communication partners remain more or less in one place. Hence, videotaping is facilitated (Gregory & Barlow, 1989). Moreover, children have been found to be more information-seeking during book activities than in toy play (Bernstein Ratner, Parker & Gardner, 1993).

As with play, numerous advantages of storytelling with young children have been documented. These include advantages in the process of language acquisition, language

stimulation (Gregory & Barlow, 1989), and language development (Erting, 2001; Kirchner, 1991 in Anderson-Yockel & Haynes, 1994).

Storytelling offers the methodological advantage of providing a constrained context with a known topic, a level of structure and control, which is absent in many other caregiver-child routines (Van Kleeck, Gillam, Hamilton & McGrath 1997). Similarly, there is an element of predictability in joint-book reading (Kirchner, 1991 in Anderson-Yockel & Haynes, 1994).

With regard to pre-linguistic communication, joint attention is established between conversational partners during storytelling (Van Kleeck et al, 1997) and caregiver language becomes contingent with the child's focus of attention (Harris, Kasari & Sigman, 1996). Moreover, storytelling routines have the turn-taking characteristics of a conversation (Snow, 1989 in Bernstein Ratner et al, 1993). Since books place the actions and vocalizations of the child in an interpretable context, more successful communicative interactions are facilitated. This is especially important in the present study in which caregiver attempts to maintain semantic contingency are hampered because of difficulty in interpreting some of the children's utterances. Book sharing with young children provides opportunities to interactively construct meaning with the adult (Erting, 2001).

- **Books**

Two books, rather than one book, were selected in order to avoid the possibility of a particular book influencing the communicative interaction. These same books were employed at all videotaping sessions, primarily as a control factor.

The books employed in this study included "Spot Goes to the Park" (Hill, 1991) and "Ben and the Bear" (Riddell, 1986). These books were also employed in Botha's (1997) investigation of communication strategies employed during storytelling interactions between three hearing mothers and their deaf children (aged 3 to 5.6 years). Botha (1997) reported that these books were useful in that six of the seven parameters under investigation in the study were used in both books. The differing narrative structures allowed for different communicative aspects.

The rationale for the selection of these particular books is as follows. Firstly, they are age-appropriate for the children in the study. Secondly, they have a simple narrative structure that enables elicitation of a variety of language structures as well as important aspects of sign language, such as facial and spatial aspects. According to Labov's (1977) narrative elements (abstract, orientation, complicating action, evaluation, resolution and coda), the narrative of "Ben and the Bear" (Riddell, 1986) is more complex than that of "Spot Goes to the Park" (Hill, 1991). "Spot Goes to the Park" contains less elements than "Ben and the Bear". Moreover, unlike "Ben and the Bear", "Spot Goes to the Park" does not have a continuous complicating action, and there is a resolution in the majority of the pictures.

Thirdly, the large, colourful pictures represent common objects, toys and animals as well as a young male child, engaged in everyday activities. According to Hampson and Nelson (1993), for a study of this nature, books need to contain simple representations of common objects, toys and animals engaged in activities. Moreover, the books are believed to encourage aspects such as pantomime, and be sufficiently simple to enable the children to 'follow' the story and thus encourage dialogue.

The researcher blanked the story text out in order to encourage a spontaneous storytelling episode involving a variety of communicative contributions performed by caregiver and child, rather than caregivers simply reading the text verbatim with minimal interaction. Of note, the absence of text was suitable for the study population in view of the educational history of the caregivers.

4.5.3 Data Collection Procedures

Procedures of data collection were implemented in the evaluation of the communicative intervention programme. In line with the programme objectives outlined in **Appendix 4**, the measures of evaluation were as follows:

- Pre- and post- intervention video analysis of communication and sign language parameters and of caregiver use of sign language;
- Post-intervention evaluation questionnaire; and
- Post-intervention focus group interviews.

Each of these three measures will now be discussed in terms of the rationale for being indicators of the programme objectives and procedures of data collection.

4.5.3.1 Communication and Sign Language Outcome as a Measure of Programme Effectiveness

Previously, different communication parameters have been employed to assess changes in communicative behaviours over time (e.g. Spencer, 1993) or differences between groups (e.g. Prendergast & McCollum, 1996). Similarly, the parameters under investigation in this study, still to be described in section **4.6.1.4**, were analyzed to examine clinical and/or statistical change in the interaction process over the course of the intervention, and hence contribute to the evaluation process.

(i) Data Collection Procedures for Video-taped Dyadic Interactions

- **Video-recording of Caregiver-Child Interactions:**

Communicative interactions between all hearing-Deaf dyads were observed over time by means of videotaping sessions prior to and following the intervention. Videotaping procedures were adapted from a great number of studies, which have employed a video-analysis procedure (e.g. Cole & St. Clair-Stokes, 1984a, b; Spencer, 1993; Rea et al, 1988; Lartz & Lestina, 1995; Lartz & McCollum, 1990).

The widespread use of the method of videotaping dyadic interactions confirms that it is a very popular, and hence successful, method (e.g. Rea et al, 1988; Pratt, 1991; Spencer, 1993; Prendergast & McCollum, 1996) in observational studies. Cole and St. Clair-Stokes (1984b) assert that a video analysis procedure increases awareness of the

communicative importance of particular aspects of interactions (e.g. the functions of contributions).

According to Cole and St. Clair-Stokes (1984a), videotaping is the method of choice for collecting a sample of communicative behaviours since it provides both an auditory and a visual record of the ongoing events. Since much communication during the early language acquisition process occurs through non-vocal means, the visual record is particularly important (Cole & St. Clair-Stokes, 1984a). This point applies to the present study that concerns sign language communication. According to Lewis & Penn (1989:8), a video recording becomes "essential for the sampling of a deaf child's language". Non-verbal communication is particularly important in deaf communication.

Moreover, auditory-visual data implies having an immediate, retrievable record of the communicative events and hence allows for exhaustive examination of the data (Cole & St. Clair-Stokes, 1984a).

- **Videotaping Procedure**

Personnel

The play and storytelling interactions were video-recorded by the researcher.

Equipment

The interactions were recorded either with a colour VHS Bauer Bosch Video Camera Recorder (VCC 526 AF) equipped with auto-focus, or a Panasonic Video Camera Recorder (VZ1 VHS-C) equipped with optical and digital zoom facilities. Interactions were recorded on high quality TDK videotapes.

Technical details

Technical details regarding filming of data were addressed in the pilot study and guidelines from previous studies (e.g. Tait, 1993; Spencer, 1993; Pratt, 1991) were applied. Seating and lighting were particularly important.

Each of the caregiver-child dyads was seated on the floor rather than at a table, firstly to ensure that their entire bodies could be viewed and secondly to minimize structure imposed on the interaction and thus facilitate a more natural interactive session. The researcher sat at the dyad's eye level during recordings using a hand-held camera. Interactions were recorded where sufficient lighting was available, so that the signing and facial expressions could be captured clearly on videotape. A dark, but not black, background was necessary to avoid the effects of shadows for those with light complexions. A light background was necessary for those with dark complexions to allow for investigation of facial expressions.

Instructions to Caregivers

Each caregiver was given a brief description of the purpose of the videotaping and her role in the play and storytelling session. She was instructed to play with and go through the books with her child. She was asked to interact as naturally as possible with the child. There was therefore no specific order of activities to which caregivers had to adhere. It was made clear that it was not necessary to play with all of the toys provided or to go through both of the books.

Duration of interaction

Videotaping commenced only once the participants were ready and playing comfortably. A 'warm-up' period of approximately 2 minutes was employed, contributing to the collection of a representative sample. Further rationale for use of this 'warm-up' period were as follows. The first was to allow both caregiver and child to become accustomed to the video camera set-up so that normal interactive patterns could resume; the second was to allow the child to explore the toys before the caregiver began to interact. This 'warm-up' period was not recorded.

Spencer (1993) reports findings that initial time alone with the toys resulted in a child's tending to spontaneously engage his/her mother in play or communication when she joined the infant.

A particular time limit was not set prior to videotaping. In order to allow for analysis of the same period of time for play interaction across all dyads, the aim was to record approximately 6 minutes of play. Similarly, in previous studies the duration of play between mother and deaf child has ranged from approximately 2 minutes (Rea et al, 1988) to up to 20 minutes (Pratt, 1991), usually following a 'warm-up' period of approximately 5 minutes (Tait, 1993; Spencer, 1993; Rea et al, 1988).

No time limit was imposed for the storytelling interactions to allow for a representative sample of typical caregiver-child interaction during storytelling. Storytelling with books is a more finite type of task than play and so the entire storytelling interaction was to be recorded.

4.5.3.2 Programme Evaluation Questionnaire as a Measure of Programme Effectiveness

A 30-item evaluation questionnaire was developed for the study as a means of evaluating the programme from the perspective of caregivers, and was to be used in conjunction with the other measures of effectiveness.

The primary objectives of the evaluation questionnaire were as follows:

- To determine an impression or quality rating from caregivers on the intervention;
- To allow caregivers to compare their sign language and particular aspects of communication with their child, and general communicative interaction with their child, pre- versus post- intervention;
- To determine caregivers' preferences in terms of times of day for, and duration of each, session;
- To determine caregiver perceptions of their progress in the programme, and of any changes in communicative interactions with their children;
- To obtain feedback from caregivers regarding particular items on the agenda, such as storytelling and video feedback in the service delivery; and
- To obtain feedback from caregivers regarding resource materials provided.

(i) Data Collection Procedure for Evaluation Questionnaire

The researcher, in a face-to-face interview, administered a semi-structured evaluation questionnaire to each of the caregivers individually, following the final session of the programme. Items were presented in the first language (English and/or Afrikaans, isiXhosa) of the caregivers, necessitating the use of an interpreter during interviews with isiXhosa-speaking caregivers. All interviews were audio- tape-recorded to ensure reliability of transcribed responses.

The questionnaire comprised both open- and close- ended questions. A request for additional comments was also included. Responses to close-ended questions were rated on a Likert-type scale and recorded on the response forms by the researcher during the interviews. Responses to open-ended questions were noted on the response forms during the interviews and were to be transcribed verbatim from the audio- recordings during the treatment of the data.

4.5.3.3 Focus Group Interviews as a Measure of Programme Effectiveness

A focus group involves a number of participants who have some common experiences or characteristics and whom the researcher interviews in order to elicit ideas, thoughts and perceptions about a particular topic linked to areas of interest (Patton, 1990). Focus groups usually comprise six to eight participants (Patton, 1990; Holloway, 1997). This group size is large enough to encourage a variety of perspectives and small enough to minimize disorder and fragmentation (Stewart & Shamdasani, 1990 in Holloway, 1997). It also allows for greater and more equal participation of group members (Robson, 1987).

Several advantages have been identified in using focus group interviews for evaluation purposes. Focus groups are a form of group interview that capitalizes on the communication among participants, hence generating data (Kitzinger, 1995). As participants respond to the questions so new ideas and relations are discovered on the basis of participant interactions (Dilorio, Hackenberry-Finch, Balbach & Rivero, 1994;

Krueger, 1994). This cueing phenomenon allows the researcher to gain insights into a research topic that would be less available without this type of group interaction and dynamics (Crabtree, Yanoshik, Miller & O'Connor, 1993; Morgan & Krueger, 1993). Each group is unique and will influence the participants in a unique way (Robson, 1987).

The dynamics of the focus group ensure that responses can be qualified and the interview focuses on topics/issues that are most important to the participants. In this way, the more important aspects of participant responses can be identified and the groups tend to be highly enjoyable for participants (Patton, 1990). Responses that are forced or constrained, as is frequently the case with surveys or other response category type questionnaires, are not collected using focus groups (Stewart & Shamdasani, 1990 in Holloway, 1997).

An additional advantage is the highly efficient qualitative data-collection technique. Implications of this advantage include for example, lower cost and use of a larger sample size in an evaluation using focus group interviewing as opposed to individual interviews (Patton, 1990; Holloway, 1997).

On the other hand, weaknesses of focus groups relate to response time, the facilitator and participants. The number of questions asked is limited in that the response time to any given question is increased by virtue of having several people responding in the interview. With regard to the facilitator, skill is necessary in managing the interview so that one or two participants do not dominate it, diversions are controlled, and so as to encourage participants who are not highly verbal to share their views. Those who dominate discussions may well influence the outcome, and one who is unable to verbalize thoughts and feelings does not make a good participant (Patton, 1990; Holloway, 1997).

(i) The Rationale for the Use of Focus Groups

A focus group methodology was included post-intervention to examine programme effectiveness according to the caregivers. Focus groups allow for a qualitative, ethnographic approach to learning about subgroups within the community through

examination of the conscious, semi-conscious and unconscious psychological and sociological characteristics and processes (Basch, 1987 in Kingry, Tiedje & Friedman, 1990).

Within the context of this research, focus groups were considered to be the most effective form of qualitative method for the following reasons:

- Focus groups are widely used to examine participants' experiences and attitudes, in the case of one's knowledge and experience not being fully captured in reasoned responses to direct questions (Kitzinger, 1995). Through comparison and contrast of one's views to those of the other group members, participants become more explicit about their own views (Morgan & Krueger, 1993).

- Focus groups are a direct method of obtaining information in a social context (Beaudin & Pelletier, 1996) as they are sensitive to cultural variables and take the needs of a community into account (Barbour, 1995). According to Kitzinger (1995), focus groups are very effective in cross-cultural research. In this study, focus groups allowed for cultural norms and values to be highlighted among the caregivers. The use of facilitators representative of the same cultural and linguistic population of the participants was believed to contribute towards cultural and linguistic sensitivity and relevance.

- Focus groups provide some quality controls on data collection (Patton, 1990). They can be used in conjunction with other research approaches. They have proven to be useful in interpreting quantitative results by adding depth to the responses obtained in a questionnaire (Krueger, 1994). In this study, findings of the focus group interviews were to complement quantitative and qualitative findings obtained from other methods employed.

- Focus groups have been useful in identifying the strengths, weaknesses and necessary improvements of programmes. In fact, the group's dynamics usually contribute to focusing on the most important issues in a programme (Patton, 1990). In this

research, the focus group findings were to contribute towards programme evaluation primarily in that programme objectives could be examined.

(ii) Data Collection Procedure for Focus Group Interviews

- **Focus Group Facilitators**

Facilitator Selection Criteria and Description

The interviewer in a focus group interview becomes the facilitator in the group discussion (Holloway, 1997). The quality of the information obtained is largely dependent on the group facilitator (Patton, 1990). In order to remain culturally sensitive and to administer the interviews effectively and in the first language of the caregivers, an Afrikaans-speaking (L1) interviewer and an isiXhosa-speaking (L1) interviewer were employed. Both interviewers were Speech-Language Therapists & Audiologists by profession, were proficient in English, and had the same racial affiliation as the caregivers in their particular focus group. Moreover, both were familiar with the nature of the research project, had previous contact with the focus group participants, and had previous experience in group-facilitation in the field of Speech, Language, and Hearing.

In view of these facilitator characteristics, neither the quality nor the quantity of the information obtained from the focus groups was believed to be compromised in any way.

Role of Facilitators in Data Collection

The two facilitators participated in the collection of the interview data by facilitating the focus group interviews.

The objectives of the investigation as well as the proposed roles of the facilitators were presented and discussed at the outset. The facilitators received training in presenting the questions for the interview sessions and were engaged in discussions on possible conflict situations. The importance of their role as a non-directive facilitator was emphasized. They were required to familiarize themselves with the content of the questions and to translate these into the language of the caregivers in their interviews prior to the sessions.

- **Allocation of Participants to Focus Groups**

In view of the need for an optimal focus group size of six to eight, and in view of the multilingual and multicultural nature of the participants, they were divided on the basis of a common spoken first-language. Subsequently, the one group of caregivers comprised first language English and/or Afrikaans caregivers (N = 7) from the South African Cape Coloured community, and the other group comprised first language isiXhosa caregivers (N = 9) from the South African Black community. Of relevance is the mixing of English and Afrikaans by the Cape Coloured community represented by seven participants. The interview could thus be conducted in English and/or Afrikaans, according to the flow of the responses.

It is important to highlight that these two groups of participants were not regarded as two separate groups generating information but rather as one group of participants generating a rich source of qualitative data.

Holloway (1997) states that language defines culture in that culture may be defined as the life experiences (including a shared communication system such as language) of a group; the learnt behaviour that is socially constructed and transmitted. An ethnographic approach in qualitative research places an emphasis on culture (Holloway, 1997). An ethnographic approach to data collection was adopted in this study by means of focus group interviews. Cultural and linguistic sensitivity was deemed essential and the need to identify social influences on the participants was acknowledged. Ethnography in the health professions and education typically aims to improve practice (Holloway, 1997). Similarly, in this study, the aim was not to change the people but to improve the service best suited to these people.

- **Materials**

Due to the scope of the caregivers' views to be examined, the semi-structured interview questionnaire developed for use in the focus group methodology was to be conducted

over two group interview sessions. The questionnaire was therefore divided into two sets of questions, or rather discussion items, to be discussed over two sessions. In total, the focus group interviews comprised 56 discussion items. Session 1 concentrated on the more traditional medical systems relevant to the participants, beliefs regarding deafness and management of deafness. Session 2 concentrated on 'Western' medical systems, attitudes/beliefs regarding the management process and the components of the communicative intervention programme.

Construction of the Questionnaire

The semi-structured questionnaire was compiled in order to investigate and document various views of the caregivers, their families and communities relating to childhood deafness, and to evaluate components of the intervention to which they had been exposed. The content of the questions aimed to elicit different attitudes and beliefs regarding deafness (including management, and communication), as well as to investigate personal, social and environmental factors that may influence the views of the caregivers of young deaf children within a socio-economically disadvantaged community. Questions regarding the parent-training service aimed to elicit participant views on the objectives of the programme.

Questioning Format

Numerous considerations were acknowledged in an attempt to maximize information elicited during the interviews. One such consideration was the use of a questioning format rather than a topic guided format, as a means of facilitating the discussion that ensued. In this way, the analysis was more efficient and subtle differences in language were eliminated, which may have altered the intent (Krueger, 1994). Some facilitation was believed to be necessary in light of the caregivers' level of education attained.

Content of the Interviews

Patton (1990) outlines a number of measurement decisions necessary in planning an interview since these may influence the quality of interview responses. In this study, decisions were made primarily regarding question type, time frame of questions, sequencing, and wording of questions. Each of these factors will be outlined below.

A variety of **question types** was used to elicit a range of responses relating to the research interests. Questions concerned participants' behaviours or experiences, opinions, feelings and knowledge. Moreover, the **time frame** of the questions varied in that some questions were asked in the present, some in the past, and some in the future tense. Yet the evaluation questions aimed primarily to examine the views of participants at the time of the interviews – post-intervention – unless reference was made to a past experience such as diagnosis, or to the future.

The primary decision made regarding the **sequencing of questions**, related to the overall structure of the focus group interview. A suggested, rather than a fixed, sequence for the questions was compiled as part of the semi-structured approach to interviewing. Even though the questions were previously prepared, they were used as a guide during the interviews in order to allow for ensuing discussions.

Questions were grouped according to particular themes in a logical order to allow for greater coherence. At the start of the interview sessions and prior to some of the questions relating to programme components, the context was established by means of an opening or background statement. According to Patton (1990) knowledge questions also need a context. A context for these questions was established by asking the majority of knowledge questions in conjunction with questions relating to programme activities and experiences.

It was intended that the **wording** of the questions be concise and unambiguous, encouraging reflection and feedback without misinterpretation of questions. In addition to the use of a background statement, illustrative examples were included in order to keep questions as short and concise as possible and to introduce and contextualize the question/s that followed.

Qualitative interviewing aims to minimize the imposition of predetermined responses (Patton, 1990). Open-ended questions were used to gain more opinionated answers from the caregivers in their own words. Dichotomous questions were minimized firstly to

elicit maximum information (Kitzinger, 1995) and secondly because a question cannot be phrased as a dichotomy if it is truly open-ended (Patton, 1990). However, some of the questions specifically relating to the components of the programme were presented in a dichotomous manner. This type of wording allowed for more specific questioning in order to obtain more specific information required for the purposes of the study (Krueger, 1994). Moreover, the researcher believed that truly open-ended questions in these cases would not comply with the language used. The language was adapted to a level suitable for the participants.

The facilitators were instructed to apply the foregoing aspects regarding content in the translated equivalent.

- **Method of Conducting Focus Group Interviews**

Considerations Prior to the Interviews

Primary considerations related to the facilitators regarding cultural and linguistic sensitivity and to their role in the intervention process.

For the purposes of cultural and linguistic sensitivity the researcher was not physically present during the interview sessions but adopted a passive role in order to allow the facilitators to connect with the caregivers as a group. Through being representative of the same cultural group and using the same first language as the informants, it was believed that the facilitators would allow the caregivers to feel more comfortable in expressing their feelings, attitudes, beliefs, and experiences. See Krueger (1994) regarding advantages of employing an interviewer with similar characteristics to those of the informants.

Furthermore, an advantage of the particular facilitators used in this study is that they were Speech-Language Therapists and Audiologists who were familiar with many of the caregivers and their Deaf children in the management process. In particular, these facilitators played an active role in the delivery of the communicative intervention

programme by assisting in for example, caregiver-child practice activities, and by observing caregiver group discussions.

The Setting

The setting of the focus group interviews was carefully considered, as it is crucial to the success of a qualitative interview (Krueger, 1994). Several factors, as outlined below, have been reported to influence the degree of participation in focus group discussions (see Robson, 1987; Dilorio et al, 1994).

Qualitative research interviews need to occur in as natural an environment as possible (Joubert & Katzenellenbogen, 1997). The focus group interviews were conducted at the Deaf Child Centre housed within a tertiary hospital for children. This setting was familiar to all informants who participated, in that the caregivers were currently attending or had previously attended the intervention programme at this venue. Accessibility constraints were minimized for those currently attending the programme. The interviews were conducted on the same day and during the same time frame that parent-training sessions were typically carried out. In view of the large set of questions to be addressed in the interviews necessitating two interview sessions, the caregivers participated over two consecutive weeks at the close of the programme.

Focus group interviews must be conducted in a room that is sufficiently large to contain the participants comfortably (Holloway, 1997). The two groups of caregivers gathered in two separate rooms simultaneously. The one room was that used for the programme sessions while the other room served as a conference room in the adjoining room. The caregivers' children were cared for elsewhere in the tertiary setting during the interviews.

The seating arrangements of participants may well influence their perceptions of for example, status, patterns of participation and affective reactions (Johnson & Johnson, 1987). Patton (1990) regards a circle or semi-circle to be the best seating arrangement. Participants together with the particular facilitator were seated in a circular formation to enhance interactions between the participants as well as between the participants and the facilitator, and to erase an apparent position of authority.

Administration of the Questions

Questions were presented in the first language (isiXhosa, English and/or Afrikaans) of the caregivers. They were asked as well as responded to verbally. The benefit of a personal approach to answering questions has been established where good test-retest reliability has been obtained using a 'face-to-face' method (Marttila & Jauhiaimer, 1995). This verbal manner of presentation and discussion was intended to avoid literacy difficulties and enhance the reliability of the findings in that clarifications and explanations were made possible.

Recording of Data

Each of the group interviews were recorded by means of video tape recording, using a Panasonic Video Camera Recorder (VZ1 VHS-C). This means allowed for the analysis of audio-visual data that included participants' occasional use of sign language. In order to minimize obtrusiveness of the camera, it was placed in a corner of the room on a tripod rather than being hand-held and moved to highlight each different informant as s/he spoke during the sessions. In this way, it was felt that the richness of the data and the extent of the caregivers' statements offered would not be influenced.

Time

In total, close to 5 hours of video tape recording was used for the purpose of this investigation. The length of the sessions ranged from one hour to one hour and thirty minutes. These lengths are in accordance with observations of Krueger (1994) and Patton (1990) who state that a focus group interview comprising six to eight participants may be conducted over a period of one half hour to two hours. Interviews extending beyond two hours result in participants becoming fatigued and losing concentration.

4.6 TREATMENT OF DATA

Procedures implemented in the treatment of videotaped samples of dyadic interactions, of evaluation questionnaire data and focus group interview data will now be presented.

4.6.1 Videotaped Interactions

Treatment of the videotaped data of caregiver-child interactions involved the training of Deaf and hearing personnel, as well as transcription, glossing, coding and scoring (or rather tallying) according to specific communication and sign language parameters. In addition, measurement of reliability was carried out. Refer to Figure 4.2 for a schematic representation of the process of treatment of data.

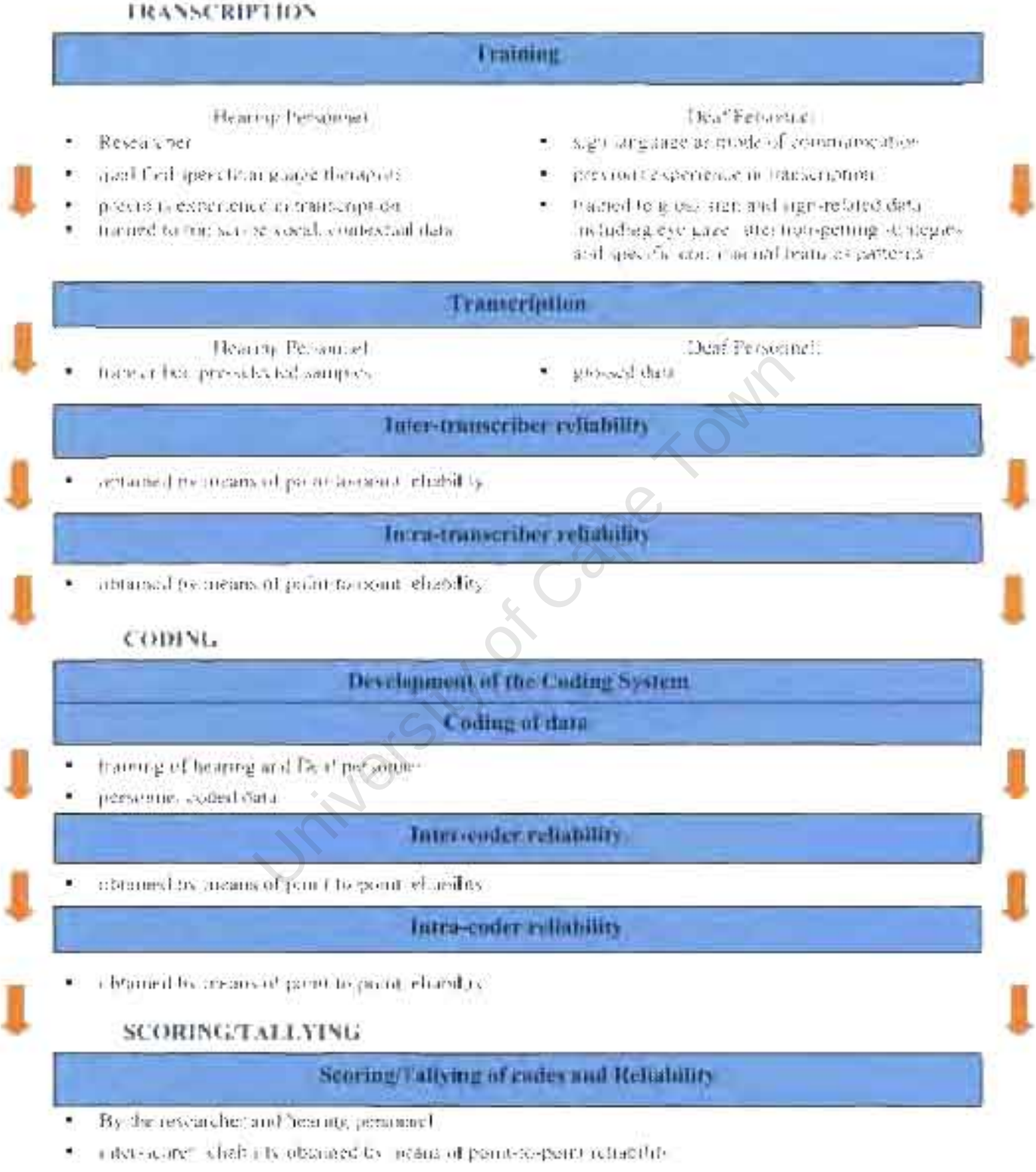

Figure 4.2: Schematic Representation of the Process of Treatment of Data

4.6.1.1 Personnel

- **Deaf Personnel**

With regard to the treatment of data, Deaf personnel were involved in the transcription and glossing as well as in coding of data and in reliability measurement.

Two Deaf adults formed an integral part of the research team. They played a far greater role than simply assisting in the treatment and analysis of data and interpretation of findings. They assisted in the development of the intervention programme (e.g. compilation of sign language content and materials), in the implementation of the programme (e.g. teaching caregivers sign language and explaining deaf-related issues during sessions), and in the evaluation process.

The Deaf adults were chosen according to specified criteria. Deaf personnel were to:

(i) Be congenitally or pre-lingually deaf;

(ii) Be fluent in (i.e. a native signer of) South African sign language, since this is the language upon which the intervention programme was based;

(iii) Be an integral member of a Deaf community - defined by Markowitz and Woodward (1978 in Padden & Humphries, 1988) as having self-identification with a deaf community and having skills in the sign language used by that group; and

(iv) Have South African Sign Language as the primary mode of communication in the home.

Table 4.2 presents an outline of the descriptive information for the Deaf personnel

Table 4.2: Description of Deaf Research Personnel

Deaf Personnel	Age	Age of onset of deafness	School	Education level	Deaf Community
#1	23 years	Congenital	For the Deaf	Grade 12*	Of Johannesburg; of Cape Town
#2	30 years	Pre-lingual	For the Deaf	Grade 12*	Of Cape Town

* Grade 12 refers to the matriculation year of secondary schooling

Both Deaf personnel were adult, female, first-language sign language users. As indicated in Table 4.2 personnel #1 was originally from the Johannesburg White Deaf community, while at the time of the study both were from the Cape Town community comprising persons associated with various racial affiliations. Personnel #2 was a member of a socio-economically-disadvantaged community with a Black racial affiliation. She could therefore identify with many of the caregivers in this study in terms of a post-Apartheid South Africa for people from disadvantaged communities. It is for this reason that personnel #2 played a primary role in programme delivery. Personnel #1 was primarily involved in the treatment and analysis of data, but also assisted in programme delivery.

The Deaf personnel were critical in a study of this nature, particularly in terms of transcription and glossing, focusing on sign and sign-related aspects in the communication. The researcher, two hearing assistants and the Deaf personnel individually as well as collaboratively watched pre-selected samples of interaction and recorded all signed and spoken language, non-verbal aspects and contextual information. Collaborative work formed part of reliability measurement. In particular, an informal reliability measure of sign language was carried out by means of comparative glossing discussions between the Deaf personnel and the researcher who had been professionally involved with the Deaf community for three years at this stage, and who was a user of sign language.

Involvement of Deaf personnel in the transcription and glossing processes allowed for more in-depth and accurate analysis of the videotaped data. Their involvement in the compilation of sign language materials was essential primarily because Sign Language was not the first language of the researcher. Finally, it is critical that deaf adults be involved in the implementation of the programme. The researcher as programme co-ordinator, the various professionals involved in rehabilitation, and the hearing research assistants cannot provide an effective programme without the input of deaf personnel.

- **Hearing Personnel**

The researcher and two hearing assistants transcribed all contextual and vocal data from the samples of interaction. These three personnel worked collaboratively in the transcription and measurement of reliability obtained by means of point-to-point reliability using 20% per sample of interaction. The same procedure was carried out for the coding and tallying of the use of particular parameters.

The hearing personnel were qualified Speech-Language Therapists and Audiologists. The two hearing assistants were considered to be suitable for this nature of work since they had previous experience in video analysis and transcription.

4.6.1.2 Training of Personnel

Training was undertaken for the Deaf and hearing personnel, for the specific tasks that they were to carry out.

The four research personnel were trained in several steps. Firstly, the researcher explained the nature and purpose of the study, and their role in the research process. Secondly, the definitions of the specified communicative parameters were provided so that they had a thorough understanding of what was to be observed. Prior to this stage in the investigation, the research had been data-lead. A preliminary set of language and

communication parameters was established and a final set was determined following the pilot investigation that was carried out by the researcher.

Both Deaf personnel were instructed on how to gloss signs, gestures and non-manual data. They did not require intensive training since both had carried out data transcription in a previous research study in which a similar transcription method was employed.

Coding and tallying procedures were then discussed with all personnel. The hearing personnel were to code the language and communication parameters, including those glossed by the Deaf personnel. The coding process included recording the codes appropriately on coding sheets. Measurement of reliability for transcription, glossing and coding was addressed with all personnel in terms of reliability between and within the rater/coder. Scoring/tallying reliability was addressed with the hearing personnel in terms of inter- and intra- scoring/tallying reliability measurement. The researcher and the four personnel were to carry out the necessary treatment of the data for the purposes of reliability measurement, while the researcher was to calculate reliability by means of point-to-point reliability measurement.

Following the transcription and glossing of samples of interactions recorded in the pilot study, all personnel worked through several examples of communicative utterances in order to practice methodological procedures and problem-solve where necessary. Final proficiency was determined once the Deaf personnel displayed familiarity and a thorough understanding of the glossing and coding of sign communication parameters, and the hearing personnel with the transcription, coding, and tallying requirements.

4.6.1.3 Methods of Transcription and Glossing

The researcher, the two hearing and two Deaf personnel undertook transcription and glossing of the pre-selected videotaped samples of caregiver-child interactions. The methods of transcription and glossing of signed data (e.g. non-manual features), actions and contextual information (e.g. eye gaze patterns) and vocal data of the caregivers is presented in **Appendix 5**.

Several steps as indicated in Figure 4.3 on the following page were implemented in the process of videotape transcription prior to coding according to specified parameters. The video analysis procedure proposed by Cole and St. Clair-Stokes (1984a, b) provided guidelines for this process.

It is evident in Figure 4.3 that the length of the samples of interaction for analysis was different for play and storytelling. A specific length was selected for play interaction but not for storytelling interaction primarily because of the nature of the tasks. That is, unlike play, storytelling with books has a finite beginning and end and this interaction was to be analysed in its entirety for the purposes of this study. Moreover, the entire sample of play and storytelling interaction was analysed as opposed to a comparison between play and storytelling across the dyads. Findings from the pilot study strongly suggested that the potential communication parameters for the coding system could be sufficiently examined using three minutes of play and the varying period engaged in in storytelling. Analysis of communicative transaction and interaction using these time frames was believed to allow for qualitative and quantitative comparisons (e.g. use of cohesion illocutions, frequency counts) across dyads and of the group of dyads pre- and post-intervention.

Selection of samples of interaction for analysis by the researcher

- Play: 3 minutes were selected* pre- and post- intervention
  The starting point was the first introduction of a new topic on the recorded sample
- Storytelling: The entire interaction of storytelling with books was selected

Allocation of personnel to subject data

- The researcher, hearing and Deaf assistants collaboratively watched the samples
- Personnel were allocated primary responsibility for particular data

Transcription and Glossing

Hearing personnel:

- Transcribed contextual information and vocal data into a pencil-written protocol on A4 transcription sheets. Space was provided for glossing and coding
- Multiple viewings of the samples encouraged accuracy of transcription prior to glossing

Deaf personnel:

- Glossed all sign and sign-related data (e.g. eye gaze patterns, attention-getting strategies)
- Multiple viewings of the samples encouraged accuracy of glossing and its relations with the transcribed data

Collaborative working

- All personnel perused the transcripts and videotaped data in collaboration
- Any queries/disagreements regarding the data in its entirety could be clarified
- Particular attention was given to non-manual features since this is an important aspect of sign language that is not the first language of the hearing personnel
- This additional viewing is believed to allow for additions and/or changes prior to the calculation of inter-rater agreement

Inter-rater reliability for transcription

- Transcribed and glossed samples of 20% were randomly selected from each of the transcripts
- Hearing personnel independently transcribed 20% per sample
- Hearing assistants focused on vocal and contextual data in reliability measurement since the sign and sign-related aspects were checked more than once by the hearing and Deaf personnel
- The researcher then calculated point-to-point correspondence

Intra-rater reliability for transcription and glossing**

- Established among the hearing and Deaf personnel
- 20% of the interactions for each dyad was randomly selected and re-transcribed

* A three-minute sample for analysis has been employed in previous studies on parent-child interactions (e.g. Lewis & Gregory, 1987).

** Results of the transcription reliability are presented in section 4.8.

Figure 4.3: Steps applied in the Video Transcription Process

4.6.1.4 Development of the Coding System

For purposes of this study, the researcher undertook to compile a coding system according to which the communicative aspects and functions of caregiver utterances (i.e. transaction), and the communication process between each caregiver and her child (i.e. interaction) could be analysed. This coding system comprised **two levels of analysis**, constituting a Communicative Aspect & Function Coding System and a Contingency Coding System.

According to Nicholas and Geers (1997) this area of research seems to have produced as many coding schemes as researchers. Coding schemes including coding criteria and categories under investigation that have been employed in previous studies in this field differ somewhat, yet many categories appear in almost every scheme. Thus, according to Nicholas and Geers (1997), some preliminary comparisons across studies are justified. However, since there is no guarantee of identical definitions or coding rules across studies by different researchers, these authors assert that results of such comparisons should be treated with caution.

Several, rather than one, resources were considered in the compilation of a coding system, for two primary reasons. Firstly, many of the existing coding schemes are either too narrow or low-level, or too broad and complex, to accurately and efficiently characterize the social interactions of children with communication disorders - including deaf children and hearing mothers (Nicholas & Geers, 1997). Secondly, as found in previous studies (e.g. Nicholas & Geers, 1997) certain categories included in a particular coding scheme were used so infrequently that they were excluded from most analyses in the particular study.

A preliminary coding system was compiled on the basis of detailed coding systems used in previous studies (e.g. Spencer, 1993; Pratt, 1991; Cole & St. Clair-Stokes, 1984a, b). Following the pilot study and final compilation of a set of parameters in this study, a system was compiled so that the communicative function of caregiver contributions and linguistically encoded communication behaviours primarily of the caregivers could be

coded. The focus was communication and language use as opposed to language form/structure, as an influence on child development.

The **first level of analysis** in this study formed a basic level of analysis with coding categories representing a set of communication parameters. All intentionally communicative contributions of the caregivers were assigned a communicative function or aspect category and where applicable the mode/s of delivery was/were noted. Table **4.3** indicates the particular categories, grouped according to attention-getting strategies, communicative functions, eye gaze patterns, and sign-related aspects and functions. Following the pilot study, the final set of parameters was established and is detailed below.

Table 4.3: Communicative Aspect and Function Coding Categories

Attention-getting Strategies	Communicative Functions	Eye Gaze Patterns	Sign-related Aspects and Functions
▪ Physical ▪ Gestural ▪ Sign ▪ Vocal ▪ Point ▪ Particular mode combination ▪ Successful or unsuccessful	▪ Label ▪ Descriptive Label ▪ Description ▪ Teach ▪ Evaluation ▪ Real world connection ▪ Question ▪ Behaviour request ▪ Response to question ▪ Acknowledgement & Praise ▪ Repetition ▪ Turn-taking contingency	▪ Caregiver-child ▪ Mutual gaze ▪ Caregiver-book a ▪ Mutual gaze-book a ▪ Caregiver-book b ▪ Mutual gaze-book b ▪ Caregiver-object or action ▪ Mutual gaze-object or action	▪ Point turn-taking ▪ Point label ▪ Functional gesture ▪ Pantomime ▪ Pronouns ▪ Signed words ▪ Simultaneous sign-speech words ▪ Nonmanual behaviours (affective; grammatical)

A **second, more in-depth level of analysis** was undertaken using the contingency coding system that incorporates the first level of analysis. Thus behavioural acts could be scored at the level of the dyad, reflecting aspects of interaction, rather than simply at the level of each participant.

In compiling the coding system, the researcher in accordance with previous research (Koester, 1992; Connard & Kantor, 1988; Reilly & Bellugi, 1996) acknowledged the reciprocal influences that parent and child have on one another. In any dyadic interaction caregiver communications cannot be fully understood and appreciated without the context of the child's communications (Conti-Ramsden, 1990). Parameters felt to be of importance in terms of both caregiver and child contributions were thus included in the coding system.

Even though the analysis pertained directly to the characteristics of caregiver communications, caregiver contributions were coded in relation to discourse function, the context of the characteristics of the child contributions as well as the child's participation in the interaction.

Frequency counts as opposed to proportions were recorded and used in analyses to allow for an in-depth investigation of the nature of communication and language use prior to and following exposure to the intervention programme. Proportions in terms of percentage frequencies of occurrence can be calculated on the basis of frequency counts. The duration of use of communication parameters was not necessary for the purposes of this study.

The final Coding System developed for, and used, in this study can be seen in Table **4.4(a)** and Table **4.4(b)**. Table 4.4(a) illustrates the in-depth analysis of semantic contingency. The relationship between the major category (e.g. recast of caregiver utterance); the communicative function type (e.g. labelling as an assertive); and communication mode (e.g. sign) is indicated in Table 4.4(b).

Only those communication behaviours that were not part of a particular occurrence of communication breakdown were included in this coding system. Definitions of the final set of communication behaviours for use in the coding system are presented below in section **A**. Some possibilities of breakdown are mentioned. Investigation of breakdown and repair as well as of aspects of caregiver sign production is outlined in section **B**.

A total of 13 communication behaviours constituted the meaning illocutions and 8 constituted the cohesion illocutions, totalling 21 behaviours represented in the contingency coding system.

Table 4.4(a): Caregiver Coding System

Caregivers' Contingency Coding System													
Communication Mode	**Meaning Illocutions**												
	Assertives								**Requestives**			**Directives**	
	Lab	Dlab	PL	Desc	Tch	Eval	Rwc	Pant	PQ	CQ	Breq	AD	BD
Gesture													
Sign													
SSp													
Nm													
NmG													
NmS													
NmSp													
NmSSp													
Egaze													
Phys													

Communication Mode	**Cohesion Illocutions**							
	Responsives			**Regulatives**			**Contingency**	
	CA	PA	Ack	AG	PAG	Rep	TTcon	PTT
Gesture								
Sign								
SSp								
Nm								
NmG								
NmS								
NmSp								
NmSSp								
Egaze								
Phys								

KEY

SSp = sign-speech
Nm = nonmanual
NmG = nonmanual-gesture
NmS = nonmanual-sign
NmSp = nonmanual-speech
NmSSp = nonmanual-sign-speech
Egaze = eye gaze
Phys = physical
Lab = label
Dlab = descriptive label
PL = point label
Desc = description
Tch = teach
Eval = evaluation
Rwc = real world connection
Pant = pantomime
PQ = product question
CQ = choice question
Breq = behaviour request
AD = attention directive
BD = behaviour directive
CA = choice answer
PA = product answer
Ack = acknowledgement and praise
AG = attention-getting strategy
PAG = point attention-getting
Rep = repetition
TTcon = turntaking contingency
PTT = point turntaking

Continued on the next page...

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Table 4.4(b): Subcategories of Meaning Variables, for example Label

Communication Mode	Meaning Illocutions: Assertives: Label				
	Recast of caregiver utterance	Recast of child utterance	Continuation	Imitation	Topic change
Gesture					
Sign					
ssp					
Sm					
SmG					
SmS					
Smsp					
SmSsp					
Gaze					
Phys					

A. Identification of Parameters for the Caregiver Coding System

As part of a more naturalistic approach in this study, the parameters under investigation were determined primarily by the data (as was the case in a study carried out by Andrews & Taylor, 1987). Rather than the data being forced into pre-existing categories, the data from the pilot study contributed at large to determining the categories of communicative contributions. In addition, this approach required a review of research and literature on communicative contributions employed in adult-child interactions.

Several of the communication strategies observed in the caregiver-child interactions correlated with those documented in previous research and literature in the field of communicative interaction with young hearing, hearing-impaired and deaf children. For example: eye gaze patterns (Rea et al, 1988); attention-getting strategies (Spencer, 1993); expansion (Greenberg, 1980a); and maternal question forms (Lartz, 1993).

The parameters below were defined on the basis of previous studies as well as in accordance with observations of dyadic interactions under investigation. For ease of analysis and coding, each parameter was given a corresponding acronym or abbreviation. These are provided in parenthesis following the label given to each parameter.

The following definitions of parameters will ensue as follows. The major categories in the contingency coding system will be addressed, followed by modality and different combinations thereof that apply to each entry in this coding system. The set of meaning and cohesion illocutions will then be addressed. The subcategories of meaning and of cohesion illocutions, and of eye gaze, are those parameters comprising the communicative aspect and function coding system that enabled the initial basic level of analysis.

A1. Major categories of the Contingency Coding System

The major categories of recasts, continuation, imitation and topic change, as depicted in Table 4.4(b), were assigned codes once communication aspects and functions had been assigned codes. In this way, the coding process involved levels of coding. An extract from a sample of interaction is presented in **Appendix 6** to illustrate the coding process.

Recasts (rec)

Contingent utterances, such as semantically related utterances (Peterson & Sherrod, 1982 in Conti-Ramsden, 1990); models (Lasky & Klott, 1982 in Conti-Ramsden, 1990); referentially immediate utterances (Cross, 1977 in Conti-Ramsden, 1990) and/or expansions (Sherer & Olswang, 1984 in Conti-Ramsden, 1990) are a subset of child-directed speech that have in common the fact that the adult takes the child's focus of attention and topic of conversation, and incorporates these into the adult's next utterance/s in the dialogue. These utterances are often referred to as recasts (e.g.: Baker & Nelson, 1984 and Nelson, Bonvillian, Kaplan & Baker, 1984 in Conti-Ramsden, 1990). Recasts typically repeat the child's utterance in a more conventional form (Pine, 1994).

For the purposes of this study, simple and complex recasts used by the caregivers were grouped together as recasts in the contingency coding system. However, caregiver recasts of the child's preceding utterance (**Recc**) were separated from those recasts of the caregiver's own preceding utterance (**Recm**). Conti-Ramsden (1990) defines simple and complex recasts as follows.

Simple recasts are replies that continue reference to the central meaning of the child's preceding utterance but differ structurally. Structural changes are limited to only one major component, namely subject, verb or object, of the child's utterances. Expansions are viewed as a subset of simple recasts.

An example of an expansion is:

Child: BALL

Mother: BIG BALL

Clearly, expansion is an elaboration by the caregiver of any preceding child contribution to form a semantically or grammatically complete sentence (Cross, 1977 in Cole & St. Clair Stokes, 1984b). Thus, imitation with expansion occurs when the caregiver's utterance includes the child's utterance in a semantically and syntactically expanded form (Iacono et al, 1998).

In this study, expansions included utterances of the caregivers that expanded on either the child's utterance or their own utterance. This allowed for the investigation of the nature of the expansions in order to determine the quality of language stimulation techniques. All expansions were coded according to modality.

Complex recasts are replies that continue reference to the central meaning of the child's preceding utterance, but two or more of the major concepts are structurally changed (Conti-Ramsden, 1990).

Continuations (CON)

In this study, continuations include all utterances that continued the particular topic, did not satisfy the definition for recasts and were not imitations. Continuations serve to maintain the topic of conversation, without much explicit overlap in the words of the child's or adult's utterances (Conti-Ramsden, 1990).

Imitation (Imit)

Imitation refers to the repetition or copying of another's (being the child in this study) preceding utterance or prior communication (Meadow, Greenberg, Erting & Carmichael, 1981; Cross, 1977 in Cole & St. Clair Stokes, 1984b). Imitations are exact, immediate imitations by the adult of a complete or partial preceding utterance (Conti-Ramsden, 1990). According to Nind and Hewett (1994), imitation is not an isolated strategy but one of many complementary features of an interactive sequence. Imitation thus relates to semantic contingency.

In this study, imitations by the caregivers were coded according to communicative function (e.g. label) being imitated and to the modality (e.g. gesture and non-manual) in which they were expressed.

Topic Changes (Topch)

These contributions constitute a clear change of topic from the previous utterance. This change can be expressed in any syntactic form (Conti-Ramsden, 1990). According to Conti-Ramsden and Dykins (1991), a topic shift occurs when one of the conversational partners disengages him-/her- self from the previous set of concerns, at the verbal and/or the non-verbal level/s.

Since the intervention in this study was one of parent training, topic shifting by the caregiver was of importance as opposed to by the child. Two types of topic changes were of interest namely, abrupt topic changes and contingent topic changes.

An *abrupt topic change* was defined as the introduction of a totally new topic in the interaction that was unrelated to the previous communicative contribution of either the caregiver or the child. This type of topic change contributed towards a breakdown in the interaction and was coded as such. A *contingent topic change* was defined as the introduction of a shift in attention to a new aspect of the topic of the previous turn or turns relating to some general topic. Such a topic change maintained a connection to the caregiver or child's previous communicative contribution/s.

A2. Modality and combinations of modalities

Eye gaze

Since sign language involves the visual as opposed to the vocal modality, eye gaze is a prerequisite for receiving communication (Galloway & Woll, 1994). Direction of gaze relates to visual attunement and to semantic contingency, and was divided into three categories:

(a) Any reference to behaviour involving eye contact, gaze or orientation toward another person (e.g. caregiver looked at child), (Wilcox, 1992). In this study, the

focus was on the gaze of the caregiver and on the eye contact between caregiver and child. The eyes may have been focused on the communication partner's face and/or hands.

According to Porritt (1990) **eye gaze** occurs when one looks at another person, and **eye contact** occurs when both look at one another. Hence this category was subdivided according to the following eye gaze patterns:

(i) Caregiver's gaze to child in which case the majority of caregivers were the mothers of the child (**m-c**);

(ii) Eye contact/mutual gaze (**mg**)

(b) Any reference to behaviour involving eye contact, gaze or orientation toward an object or activity/behaviour. This category was subdivided as follows:

(i) Caregiver's gaze to object/activity (**m-o**);

(ii) Mutual gaze to object/activity (**mg-o**)

Mutual gaze is synonymous with the terms of joint reference and joint attention. Bakeman and Adamson (1984 in Harris et al, 1996) define joint attention as a state in which the attention of caregiver and child are focused on the same object.

c) Gaze aversion **(GA)**

Aversion of gaze may be defined as any reference to behaviour involving the termination of eye gaze or orientation with a person (e.g. child stopped looking at mother to look back to the toys), (Wilcox, 1992). Gaze aversion formed part of a separate analysis on communication breakdown.

This category applied only to the children in the study so that the ability of each caregiver to secure and monitor the child's attention and maintain effective communication could be observed. Indeed however, gaze aversion by the child may be related to numerous factors including among others, child behaviour characteristics. The child may avert gaze from his/her caregiver in order to gaze at a person/object or stare blankly because s/he is no longer interested in caregiver's contributions.

Sign

This category refers to all utterances that were conveyed using sign language. Even though caregiver utterances were analysed in this study, signed utterances of the children were transcribed as they related to caregiver recasts and imitations.

Non-manuals

According to McIntire and Reilly (1988) facial expression in sign language functions in two distinct ways. The first is to convey emotion (affect) and the second is to mark specific grammatical structures.

Reilly, McIntire and Bellugi (1991) found that facial expression used for affective purposes, acts as a transition in to the facial morphology of the grammar of sign language.

Baker-Shenk (1983) asserts that non-manuals are critical in the marking of particular grammatical structures in sign language. Consequently, facial signals in sign language function as grammatical signals (McIntire & Reilly, 1988). Grammatical facial expressions in sign language have been found to have certain characteristics in common with those of intonation in spoken languages. For example, both play a wide range of grammatical and paralinguistic roles. As with intonation, facial behaviours are able to take on both affective and linguistic roles (Reilly et al, 1991).

Baker-Shenk (1983) reports that linguistic, facial behaviours are highly constrained and rule-governed, while affective behaviours tend to be inconsistent, variable and far more dynamic. Furthermore, the former behaviours have clear and specific onset and offset patterns and their co-ordination with manual signs is vital in indicating the scope of a specific linguistic behaviour.

Communicative or paralinguistic facial behaviours are similar to those of affect in terms of their contour patterns (McIntire & Reilly, 1988). Examples of these are familiar facial expressions such as those for request (raised brows), questioning or puzzled (furrowed brows) and negating headshakes. Similar facial expressions (e.g. raised brows) can

perform either affective or grammatical functions in sign language (McIntire & Reilly, 1988).

The sub-categories of non-manual signals were as follows. The acronym for non-manual is **nm** which substitutes the gloss used to indicate non-manual features.

- **nmaff:** affective facial expression for basic emotions of for example, joy, sadness or surprise.
- **nmnod:** nods to indicate "yes", "okay", or "good" as an assertion or acknowledgement.
- **nmneg:** non-manual behaviour that marks negation, such as a headshake or shrugging of the shoulders.
- **nmq:** caregiver asks child a question solely by means of a questioning facial expression. For example, furrowed brows and a wrinkled nose to indicate WHAT.
- **nmadj:** non-manual behaviour that represents an adjective (e.g. FAT)
- **nmadv:** non-manual behaviour that represents an adverb

The above glossing applied when non-manual features were used simultaneously with other non-manual features and/or modalities.

Particular signs incorporate non-manual features as part of the sign production. For example, the sign for FROG incorporates a series of puffing with the cheeks and airflow. Such signs were coded according to the sign rather than the sign + non-manual combination mode, and notes were recorded regarding the use or absence of the non-manual features.

Gesture (G)

Gesture is defined as a motor movement that is not a formal sign. Both transitive and intransitive gestures were included in this study. That is, all gestures that did or did not involve pretended object use were included, as defined by Helm-Estabrooks (1992).

Inclusion of both types of gestures allowed for an investigation of the entire repertoire of caregivers' gestural communicative contributions, including those that were semantically contingent in relation to the child's actions/utterances.

Speech (sp)

This category includes caregivers' speech utterances, including vocal utterances such as "mm mm" to indicate "no". Utterances conveyed in speech alone contributed towards communication breakdown.

Sign and Speech (ssp)

This category includes utterances conveyed simultaneously in sign and in speech. An utterance was coded in this category only if the same meaning was conveyed by each of the modes.

Sign and Non-manual (nms)

This category includes utterances conveyed in sign and accompanied by a non-manual feature.

Speech and Non-manual (nmsp)

This category includes utterances conveyed in speech and accompanied by a non-manual feature. An utterance was coded in this category only if the non-manual component could convey the intended meaning in isolation.

Sign, speech and non-manual (nmssp)

This category includes utterances conveyed in sign-speech and accompanied by a non-manual feature.

Gesture and Non-manual (nmG)

This category includes the use of gesture accompanied by a non-manual feature.

Physical (phy)

This category comprises any form of physical contact made by the caregiver towards the child in order to gain the child's attention (e.g. tapping, stroking; manipulation of the body or clothing).

A3. Meaning Illocutions

Meaning illocutions are those acts that appeared "to function in conversation primarily to share meaning and information and to build and sustain relationships with people" (Conti-Ramsden, 1990:264). Similarly, the use of language to transmit information is embedded in the discourse literature where transaction is viewed as an expression of content (Brown & Yule, 1983).

Assertives

Assertives are utterances used to report or describe observable environmental aspects (Conti-Ramsden, 1990). The following assertives were included in the coding system:

- **Label (lab)** - spontaneous naming of objects, people, pictures (Cole & St. Clair-Stokes, 1984b).

  E.g. BALL

The code **lab** also applied to the identification of an object or person (Hampson & Nelson, 1993).

E.g. "that's a ball" simultaneously produced with: point BALL

- **Descriptive label (dlab)** - a label for objects, people, or pictures that describes one or more characteristics or properties.

  E.g. RED

- **Point label (PL)** - This category comprised two types of points:
  - a point that simultaneously accompanies the matching vocal label; and
  - a point that serves as a sign for a personal pronoun

- **Description (desc)** - an utterance that describes events, locations, and properties, possessions of objects or people; the utterance includes propositions and suggestions.

  E.g. MY DOLL; FINISHED

- **Evaluation (eval)** - an utterance that expresses personal judgments/attitudes about a person, object, or situation; the utterance includes emotions.

  E.g. point NICE

- **Teach (tch)** - a teaching strategy that could include one of the following:

  (i) Caregiver manipulates child's hand either to perform an action or to produce a gesture/sign;

  (ii) Caregiver shows the child how to perform a particular action, without physically manipulating the child's hand/s;

  (iii) Caregiver produces a sign on the child's body or in the child's signing space rather than in her own signing space;

  (iv) Caregiver explains a concept or action to the child;

  (v) Caregiver's utterance immediately following an incorrect utterance by the child, serves to model the correct form or meaning of the utterance for the child.

- **Real World Connection (rwc)** - an utterance or action that serves to draw an association between the present context (i.e. play or storytelling) and the child's previous experience (Botha, 1997).

  E.g. mother points in the book to the picture of a teapot that has fallen over, and then demonstrates this same event using the teapot from the tea-set provided for the play interaction.

- **Pantomime (pan)**

Mogford (1996) defines the act of pantomime as the use of a descriptive gesture, the form of which mimics its referent. Pantomime is said to be largely body movement and posture. Lederberg (1984) explains pantomime or pantomime gestures as being hand and arm movements without an object that mimic either visual or kinaesthetic characteristics of an object or event. She classifies the act of pantomime as gestural communicative acts. An example of an act of pantomime is where a mother acts out a character in the storybook by mimicking the character's facial expression and body position.

Requestives

Requestives are utterances that demand a response from the conversational partner, and that are used to obtain information about objects, situations or actions (Conti-Ramsden, 1990).

Maternal questions are utterances, spoken and/or signed and/or non-manual signals, used by the caregiver to request information (Wh- question), confirmation (yes/no question) or action (behaviour request) from the child (Lartz, 1993; Gaustad, 1988). The following question types formed part of the dyadic interaction coding system:

- **Choice questions (CQ)** – either/or <u>or</u> yes/no question
- **Product questions (PQ)** – questions that seek information about the location, identity or property of an object, event or situation, and that are typically in the form of a Wh-question.
- **Behaviour request (Breq)** – requests that call for action, including those conveyed in the imperative form. Requesting an action or behaviour may be regarded as an attempt to control the child's behaviour during the particular turn-taking episode (Blennerhassett, 1984).

Directives

The coding category of 'directives' applied when the caregiver's communicative acts were used to direct the child's attention or to determine or manipulate the child's behaviour or action. Pratt (1991) and Nicholas and Geers (1997) applied the category of directives to these same caregiver intentions. Rushmer (1994) asserts that the topic of directive communication must be approached with the greatest sensitivity and with the understanding that a family's communication style represents their best attempts to interact with the child.

The following considerations were applied in exploring characteristics of caregivers' contributions that may help versus hinder the child's language and communication development. Firstly, directives were defined functionally according to the role they played in discourse. Secondly, use of directives in the analysis was to be interpreted as it relates to the use of questions and behaviour requests that serve to elicit a response; to

turn-taking contingency; and to topic changes that either contribute or do not contribute towards breakdown. Thirdly, possible reasons for the caregiver being directive were considered. Duchan (1989) point out that such reasons may relate to the child's responsiveness.

This category is more subjective than other categories (Pratt, 1991). Guidelines were thus employed in the decision-making process.

- **Attention directives (AD)** included utterances containing aspects such as the child's name, *look/see* verb, locative, or a specific attention-getting or attention-directing strategy.
- **Behavioural/action directives (BD)** included utterances requesting, suggesting, or commanding a particular behaviour or action, e.g. GIVE BALL.

Clearly, directives comprised communicative functions that were assigned particular codes. Coding of these functions (e.g. behaviour request) was necessary prior to the coding of the corresponding attention and behaviour directives.

A4. Cohesion Illocutions

Cohesion illocutions are those acts that appeared to function mainly to respond to the conversational partner as well as to maintain conversational flow and discourse cohesion (Conti-Ramsden, 1990). Meaning illocutions for the purposes of transaction differ from cohesion illocutions that apply to the dynamics of communicative behaviours that are meaningful in the context of interaction.

Responsives

According to Smith and Leinonen (1992) a basic conversational exchange structure consists of initiation and response. The following responsive functions by caregivers were included in the present coding system.

- **Choice answers (CA):** caregiver utterances that provide information requested by choice questions that were asked either by the caregivers themselves or by the children.

- **Product answers (PA):** caregiver utterances that complement wh- questions by providing information about the identity, location, properties and possession of objects or people. The wh- question may have been asked either by the caregiver or by the child.

These two response functions correspond to product and choice questions and hence indicate the levels of coding carried out.

- **Acknowledgements and Praise (ack)**

The use of acknowledgement and of praise was combined as one category because the nature of these communication behaviours is one of reinforcement.

Acknowledgements are utterances in which the caregiver recognises prior information provided by his/her child, and s/he responds by agreeing, acknowledging or disagreeing (Meadow, Greenberg, Erting & Carmichael, 1981). Praise is given when the caregiver approves or encourages the child and/or the child's actions (Meadow et al, 1981; Greenberg, 1980b). For example: "That's nice"; mother smiles and signs GOOD.

Regulatives

Regulatives are communicative devices used to maintain conversational flow and personal contact between communication partners. They may serve to temper the conversation in order to understand the communicative message and be understood (Conti-Ramsden, 1990). Attention-getting strategies and the use of repetition constituted the communication device of regulatives in this study:

- Attention (AG)

As is the case with eye gaze, attention-getting devices are discourse strategies in the communication of the deaf, and they relate to visual attunement as well as to semantic contingency (Galloway & Woll, 1994).

Attention-getting strategies are devices used by a communication partner in order to gain the other's attention to him-/her-self, to people or objects (Prendergast & McCollum, 1996), for the purpose of further communication (Gaustad, 1988). For example, a mother waves her hand in front of her child's face and because the child does not respond she taps her child's arm. Eye contact is established and the mother begins to sign and/or speak her intended utterance. It follows from this example that attention-getting strategies can be employed in order to gain or regain attention before initiation.

Attention-directing describes the devices used to identify for the listener the objects, persons and events referred to in the utterance (McTear, 1985). For example, the mother points to a picture in the book in order to direct the child's attention to this picture and she provides a label for the corresponding picture.

Attention- getting and -directing strategies employed by the caregivers were grouped in one category, namely attention-getting strategies which were either classified as successful or unsuccessful. Successful strategies included those that were followed by the child's gaze either to the caregiver or to the object or picture towards which attention was directed, within the same communication event. Successful strategies were then assigned the code for attention directives. Unsuccessful strategies formed part of the breakdown analysis.

Verbal and non-verbal attention-getting strategies were grouped as follows (Cole & St. Clair-Stokes, 1984a, b):

- **Physical or tactile (AG p)** – any form of physical contact between caregiver and child and approach to gain the child's attention (e.g. tapping, stroking; manipulation of the body or clothing);
- **Vocal (AG v)** – any form of vocalisation to gain the child's attention (e.g. mother calling child's name); only included in the analysis when simultaneously used with one or more other forms of attention-getting strategies. Vocalization alone constituted breakdown;
- **Gestural or visual (AG g)** – any method to gain the child's attention other than the use of physical or vocal strategies. For example, waving in front of the child's face; placing an object or manipulating an object within the child's field of vision; moving into the child's field of vision.

Gestural strategies exclude the use of pointing because of the importance of pointing in sign language development. Unlike tapping for example, pointing is integrated into sign utterances (Ackerman & Woll, 1990). All points were coded as communication devices in the sign modality.

- **Pointing to gain or direct attention (PAG)** – points directed at something concrete (e.g. object or picture) present in the context of the interactions.

Pointing as an attention-getting device may have comprised points that served as *demonstrative pronouns* (DemPro), namely points that represented signs such as THIS, THAT, THERE, and HERE. The context of the interaction determined whether the point served simply as a demonstrative pronoun or additionally as an attention-getting device. This context concerns among other factors, the child's direction of eye gaze prior to the point.

Points as attention-getters were coded as either successful or unsuccessful in gaining the attention of the child and/or directing the child's attention. A successful point was one that attracted the child's gaze to the caregiver or to the item indicated within the same communicative event.

Points that served to attract or direct the child's attention were frequently integrated into signed utterances. The success of these points was determined according to the context in which they were employed. Unsuccessful points resulted in communication breakdown.

- Signed (AGs) – a signed utterance may be used to attract the child's attention.
- Combination of attention-getting strategies – simultaneous use of a combination of attention-getting strategies. For example, physical and gestural strategies combined were coded as AG p+ g.

- **Repetition and Partial Repetitions (rep)**

The category of repetition refers to self-repetitions; where the caregiver repeats his/her own previous utterance/ communicative act (Cole & St. Clair Stokes, 1984b; Nicholas & Geers, 1997). Caregivers' repetitions may be repetitions of the target word (or sign) within an utterance, thereby supplying a model and indicating acceptance (McCartney, 1989) or be multi- word or -sign utterances. Moreover, the repetitions may be of the complete or of part of the previous utterance.

Turn-taking Contingency (TTcon)

Turn-taking contingency (Prutting & Kirchner, 1987 in Kastan, 1999) was included for use in the contingency coding system. The focus was the caregivers' use of semantic contingency in the turn-taking episodes rather than the turn exchanges per se within the dyadic interactions. The following definition of a turn indicates the nature of the caregivers' utterances that were coded in this study, while the nature of turn-taking behaviours highlights the importance of context in semantic contingency.

A **turn** is defined by Edwards and Garman (1989) as any contribution of either partner in the interaction, including supportive interventions such as "mm", "yes", etc. which do not interrupt the other's fluent groups. These authors point out that this definition yields a higher number of turns than would appear in a more conservative analysis. A **turn-taking behaviour** is executed in a previously identified predictable turn-taking routine. Moreover, the caregiver's turn must be preceded or followed by a child's turn, to be considered turn-taking (Warren, Yoder, Gazdag, Kim & Jones, 1993).

Conti-Ramsden (1990) defines turn-taking as the smooth interchanges between parent and child. There is a large body of evidence that indicates that mother-child interactions involve "synchronous alternations of turns and temporally linked behaviours" (e.g. Bruner, 1977 in Roth & Spekman, 1984:7). Turn-taking behaviour is also seen in the ritualised and repetitive games that mother and child typically play.

Since communicative interaction involves two or more people, turn-taking and reciprocity are implied (Rieke & Lewis, 1984). Turn-taking thus relates to semantic

contingency and can be referred to as **turn-taking contingency**. As with turn-taking, contingency refers to the temporal relationship between the adult's and the child's behaviour, and it allows the child to associate his/her behaviour and the behaviour of his/her interactive partner (Lamb & Easterbrooks, 1981). Turn-taking includes timing, contingent responding and the exchange of signals between caregiver and child (Nind & Hewett, 1994).

An action or utterance or eye gaze pattern of the caregiver that is concerned with the **same topic** with a preceding action or utterance and that adds information to the prior communicative act, was coded as turn-taking contingency (**TTcon**) (Cross, 1984). The prior communicative act may be that of the caregiver or of the child.

Alternatively, an action or utterance of the caregiver was coded as turn-taking contingency when there was no communication breakdown but the caregiver **changed the topic** from that of the prior communicative act of the caregiver or of the child, as part of the natural turn-taking episodes within the interaction. The topic change may have occurred in two ways, namely, the caregiver:

- Gazing at something briefly and then re-engaging in joint-attention; or
- Introducing a new/different item or action and this item or action still related to the same general semantic theme.

In this study, turn-taking contingency or a topic change may have been created by means of pointing in a turn-taking episode, hence the category of point-turn-taking (**PTT**). Pointing may have thus been coded as one or more of the following, namely point label (personal pronoun), demonstrative pronoun, regulative device as an attention-getting strategy, and contingency device in point-turn-taking.

B. Additional Parameters not included in the Contingency Coding System

The coding system allowed for the functional analysis and the contingency analysis, focusing on those communication behaviours that were not part of a particular occurrence of communication breakdown. Two additional analyses were undertaken in this study:

- Communication breakdown and repair; and
- Aspects distinguishing signs.

The acronyms for the parameters that were applied in coding are presented in parenthesis.

B1. Communication Breakdown and Repair Analysis

- **Breakdown (bb)**

If one or more of the following criteria were satisfied, a breakdown in the communicative interaction between caregiver and child had occurred and the code for breakdown was assigned during the coding procedure. These criteria are primarily based on unsuccessful communicative acts and focus on the caregiver as the primary contributor of the cause for breakdown.

(i) A communicative message that requires a response/action does not receive a response/action (Caissie & Wilson, 1995);

(ii) The caregiver is unsuccessful in gaining or directing the child's attention because the child does not respond during the same general topic to the caregiver's attention-getting strategy;

(iii) The child averts gaze (**GA**), (Greenberg, 1980a) or ignores the caregiver prior to the end of the particular communicative event;

(iv) The caregiver's utterance is conveyed in the speech modality to the child, who is profoundly deaf and making use of sign as his/her primary means of communication;

(v) The caregiver shifts the topic/activity abruptly, disrupting the smooth interchanges between caregiver and child (Conti-Ramsden, 1990);

(vi) The caregiver or child does not attend directly to either, the first or the first few item/s of the other's signed utterance, or to that which the other was pointing. In the former instance, a point precedes the utterance, while in the latter instance a point follows the utterance (Swisher & Christie, 1989);

(vii) The caregiver substitutes the intended sign with a semantically incorrect sign, glossed as **ws** by the Deaf research personnel.

- **Repair (repair)**

For purposes of this study, repair refers to the caregiver's ability to respond to communication breakdown with some form of repair.

Repair may be defined as "the ability to persist in communication and to modify or revise a signal when faced with a failure to communicate". When a communicative message is not responded to or understood by the partner, it is necessary for the communicator to persist or attempt to repair the breakdown in order to achieve effective communication (Wetherby & Prizant, 1993 in Alexander, Wetherby & Prizant, 1997:197/8).

Some possible communication repair strategies assumed to be identified in this study included the use of attention-getting strategies, contingent eye gaze patterns, and following the child's lead.

Alexander et al (1997:198) assert that effective communication requires "the ability to secure and monitor the listener's attention, to highlight new information and to modify messages if they are not communicated successfully". In this regard, obtaining and monitoring the child's attention becomes an important responsibility in communicative interaction with the deaf child. Moreover, eye gaze is one of the most critical aspects of sign language, being a prerequisite for receiving information (Ackerman & Woll, 1990). In this study, contingent eye gaze patterns of the caregivers were believed to contribute toward communication repair. For example, caregiver's gaze in the same direction as that of the child, following breakdown, was coded as a repair strategy. Similarly, following the child's lead in the interaction, as another form of contingency, was regarded as a repair strategy following an incident of breakdown.

B2. Aspects Distinguishing Signs

Stokoe (1960) proposed that there are three aspects distinguishing any one sign from another. These are as follows:

a) The place where the sign is made.

b) The shape and orientation of the hand(s); and

c) The action of the hand(s) forming the sign

These three categories include the **location** (place), **handshape** (HS) **and orientation** (O), **and movement** (Mvt) necessary in the production of any particular sign. These aspects were considered in this study with regard to the signs of the caregivers. Only those signs that did not apply to the particular intended meaning of the sign were classified as wrong signs (**ws**). That is, an incorrect sign was selected rather than the aspects of the signs being incorrect

4.6.1.5 Coding and Tallying of Sign Language and Communication Parameters

The method of coding employed in this study was to assign a particular colour code to the various language and communication parameters for the purposes of the caregiver functional analysis and the contingency analysis. Where applicable, codes included the modality and the success of the use of the particular parameter. These codes included the glossing carried out by the Deaf personnel. Additional codes were assigned to instances of breakdown and repair. All codes are presented for each of the parameters outlined in sections **A** and **B** of section **4.6.1.4** above while codes for glossing are presented in **Appendix 5** (Refer to section **4.6.1.3** above).

Figure **4.4** on the following page shows the steps implemented in the process of coding and tallying, once the transcription reliability measure equalled or exceeded 0.75 (see Figure 4.3 of section **4.6.1.3**).

Coding

Hearing personnel:

- Coded the language and communication parameters, including those glossed by the Deaf personnel

Deaf personnel:

- Perused the coded transcripts with a focus on sign and sign-related aspects
- With increased experience in this process, the personnel began to transcribe and code simultaneously as far as possible and reliability measurement for transcription and coding were then carried out. This latter procedure saved considerable time.

↓

Inter-coder reliability

- This measure was obtained among the three hearing personnel.
- 20% of randomly selected coded samples were used.
- An unsatisfactory measure called for discussion among personnel and a second attempt to produce satisfactory coder agreement.

↓

Intra-coder reliability

- This was calculated for each of the hearing personnel.
- The personnel re-coded 50% of 2 samples of pre-intervention interactions and 50% of 2 samples of post-intervention interactions.

↓

Tallying of codes

- Hearing personnel made tallies of all codes assigned, by means of manual frequency counts.
- These frequency counts provided for quantitative data to assist in both quantitative and qualitative analyses.
- The totals used in the coding system comprised these frequency counts of codes assigned to the various parameters.

↓

Inter-scorer reliability

- This measurement was carried out on the basis of 20% randomly selected samples.

↓

Preparation of data

- Frequency counts were prepared for computational analyses to yield quantitative and qualitative findings.

Figure 4.4: Steps implemented in coding and tallying

4.6.2 Treatment of Evaluation Questionnaire Data

Treatment of the evaluation questionnaires involved the researcher grouping the responses to the close-ended questions (ratings on a rating scale), and transcribing the responses to the open-ended questions from the audio-recordings. Translations were not

necessary since an interpreter was present during the interview questionnaires conducted with isiXhosa-speaking caregivers. The questionnaire data was to be analyzed by the researcher.

4.6.3 Treatment of Focus Group Interview Data

Treatment of the focus group interview data involved the training of personnel, transcription and translation of the raw data. In addition, measurement of reliability was carried out for transcription and translation.

Those involved at this stage in the treatment of data were required to:

- Be L1 Afrikaans and L1 isiXhosa, and proficient in English
- Be an integral member of their specific language and cultural community
- Have had previous experience in transcription and translation of the nature necessary in this study
- Have attained a tertiary level of education.

One of the two facilitators of the focus groups, who facilitated the English/Afrikaans speaking group, (personnel #1) and an isiXhosa-speaking research assistant (personnel #2) assisted in the transcription and translation of the data obtained from the focus group interviews. The isiXhosa assistant was not the facilitator in the isiXhosa group interviews. Both research assistants are Speech-Language Therapists & Audiologists. Two additional research assistants were employed for the purposes of reliability checks. One assistant was an English/Afrikaans speaker (personnel #3) and one was an isiXhosa speaker (personnel #4). The objectives of the investigation and the proposed roles of the four research assistants in the treatment of the data were presented and discussed at the outset. They received training in terms of the requirements for transcription and translation. Reliability checks were discussed for transcription and translation between the two English/Afrikaans-speaking assistants and between the two isiXhosa-speaking assistants. Rather than point-to-point reliability measurement, any disagreements would be discussed together with the researcher.

All questions and responses of the interviews were transcribed verbatim from the video recordings by personnel #1 and #2, in order to allow for a detailed analysis. The English-Afrikaans transcriptions were carried out, checked, corrected where necessary, and translated all into English by personnel #1. The isiXhosa transcriptions were carried out, checked, corrected where necessary and translated into English by personnel #2.

Prior to translation, reliability measurement was carried out for the transcribed data. Personnel #3 transcribed and translated 20% randomly selected from both English/Afrikaans interviews and personnel #4 transcribed and translated 20% randomly selected from both isiXhosa interviews. Any disagreements regarding transcribed and translated data were discussed among the four research assistants together with the researcher. Transcriptions and translations were altered according to the consensus reached.

Holloway (1997) points out the challenge in transcription in that people's voices vary. In this study, certain participant contributions could not be transcribed because either the participant spoke inaudibly, or more than one participant spoke simultaneously.

The English translations were to be analysed by the researcher. Discussions with the facilitators were held with regard to their impressions following the facilitation of the interviews. Similar discussions were held with the isiXhosa speaking research assistant (personnel #2) who transcribed and translated the isiXhosa interviews. The data was read through numerous times by the researcher together with personnel #1 and #2, to ensure familiarity. This was considered to be a major advantage as it allowed the researcher to become familiar with the data and in so doing, allowed for the process of data analysis to begin (Minichiello et al, 1990). In total, approximately 55 hours of transcription and translation for the isiXhosa group and 43 hours for the English-Afrikaans group were carried out.

Since the researcher was representative of a different cultural and linguistic group to that of the informants, feedback and explanation of for example cultural and traditional systems, was of great importance in preparing for the analysis of the transcripts.

4.7 ANALYSIS OF DATA

Following the above-mentioned treatment of the pre- and post- intervention video data and the post-intervention interview data, both qualitative and quantitative analyses were carried out in the evaluation process. Methods of analysis of data were adopted from both the positivist/post-positivist and constructivist-interpretive perspectives in an inclusive, complementary manner. Analysis of aspects of language and communication pre-post intervention was predominantly quantitative in nature but also yielded qualitative information, linking more with the positivist/post-positivist paradigm. Analysis of the evaluation questionnaire and focus group interview data was qualitative, linking more with the interpretive paradigm.

4.7.1 Analysis of Communication and Sign Language

4.7.1.1 Quantitative Analysis

In line with an observational research design, communication parameters were considered in terms of frequency of occurrence. The majority of this data collected pre- and post- intervention was subjected to computational statistical analysis procedures, in consultation with two statisticians, in order to determine evidence for the existence of change over the course of the intervention and to explore relationships between particular communication variables. Both descriptive and inferential statistical analyses were carried out in the evaluation of the intervention programme.

Statistical procedures suitable for a within-subjects design and for the sample size of sixteen were employed. Rather than the commonly used parametric statistical tests, equivalent non-parametric tests appropriate for small samples were employed. These included the Wilcoxon signed-ranks test rather than the paired samples t-test; stepwise regression analysis; and Spearman's rank correlation rather than Pearson's correlation.

For the purposes of this study, probability levels of 0.05 and of 0.01 were applied in interpreting the reliability of the statistical results. By convention $p<0.05$ is a first numerical indicator for change while $p<0.01$ allows for stronger evidence. The lower the p-value, the stronger the numerical evidence for change (Howell, 1989). Any change identified in the analysis procedures was considered in terms of statistical as well as clinical significance, rather than a sole reliance on the statistical tests for the purposes of evaluation.

4.7.1.2 Qualitative Analysis

Qualitative methods (e.g. interviews, videotaping) are typically employed in research of this nature (e.g. Spencer, 1993; Rea et al, 1988; Pratt, 1991; MacTurk et al, 1993).

Some of the frequency data collected on the basis of the caregiver-child interactions was not subjected to statistical analysis but rather contributed to rich qualitative information on aspects of communication transaction and interaction, complemented by qualitative notes recorded during the treatment of data. For example, contextual information regarding communication breakdown may well enable possible explanations for breakdown and any attempts or lack thereof at repair.

Qualitative information was particularly useful in identifying common trends and in complementing quantitative data. In addition, this source of information contributed towards achieving triangulation in this study (see section **4.8**). Furthermore, the use of qualitative information enabled real descriptions of real situations to be documented, and served as a means of capturing the richness of the data recorded during the caregiver-child interactions.

4.7.2 Analysis of Evaluation Questionnaire

4.7.2.1 Qualitative analysis

A thematic analysis[12] procedure, carried out by the researcher, was implemented post-intervention on the sixteen evaluation questionnaires. In view of the short length of the questionnaire and responses relative to the focus group interview questionnaire and responses, a small-scale thematic analysis was adequate. The findings of this analysis served to complement the findings of the focus group interviews, hence contributing towards triangulation (see section **4.8**). The comprehensive thematic analysis procedure will now be presented.

4.7.3 Analysis of Focus Group Interview Data

4.7.3.1 Qualitative analysis

Prior to the data analysis, all raw data had been gathered, transcribed and translated into English. The data obtained from the post-intervention group interviews was not simply analysed in accordance with the questions presented to the caregivers. Analysis was by means of a complex, qualitative series of procedures adapted from a system of analysis devised by Michelson (1997) that was informed by a number of sources (Patton, 1990; Corbin & Strauss, 1990; Marshall & Rossman, 1995). A thematic analysis, involving several stages of analysis and organisation of information, was undertaken. The stages depicted in Figure **4.5** are described in more detail below this figure.

[12] Thematic analysis requires the researcher to identify themes and patterns in interviews by means of listening to the interview data and reading the transcripts. This process involves searching the data for related categories (Holloway, 1997).

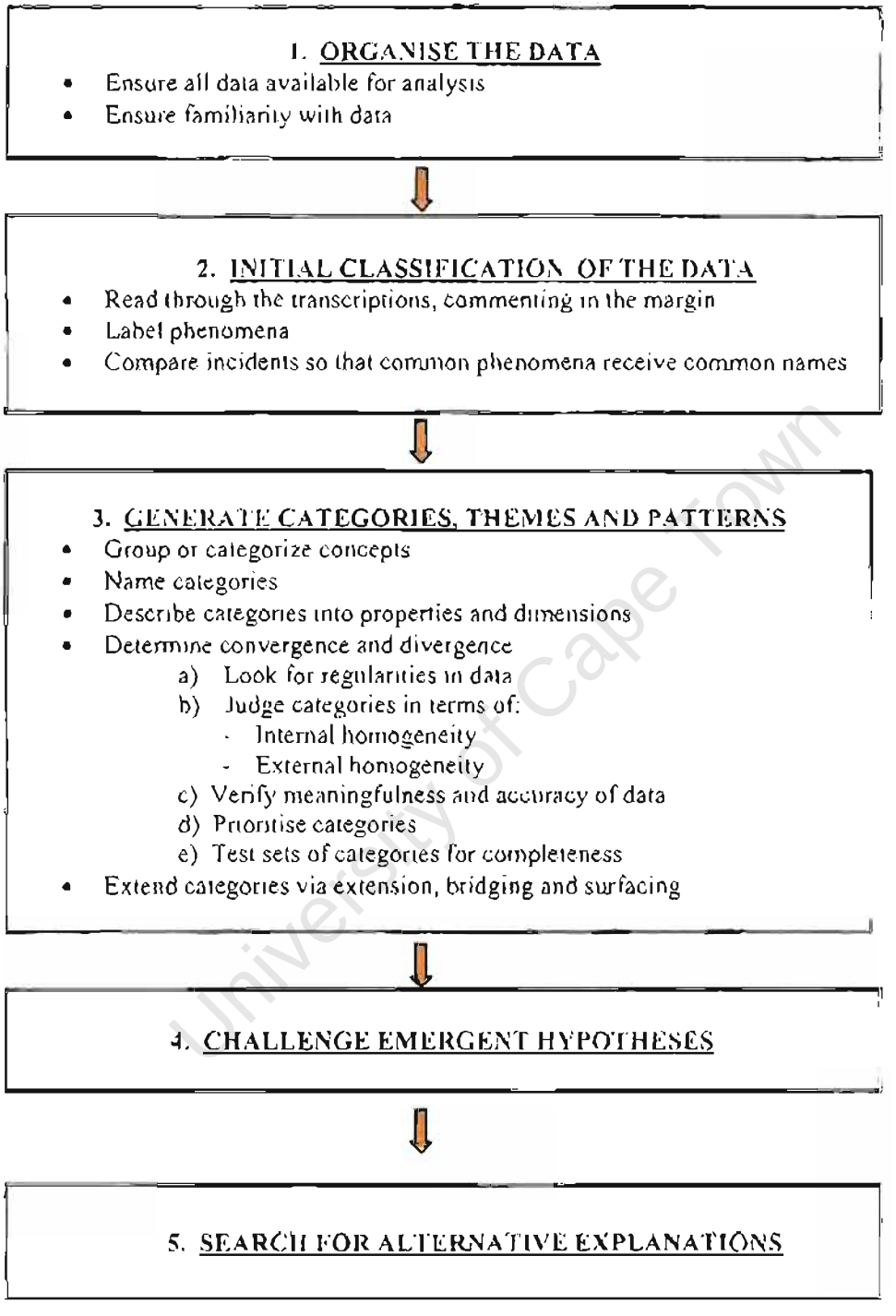


Figure 4.5: Stages of Thematic Analysis of Focus Group Interviews

In the initial stage, the researcher ensured that all data had been **collected** to be available for analysis. A time-consuming interpretive process comprising **numerous readings of the transcripts** followed, allowing the researcher to become familiar with this information and thereby facilitating further analysis (Patton, 1990; Marshall & Rossman, 1995).

The second stage marked the beginning of the **coding process**, in which a content analysis was conducted. The researcher was required to read through the four transcripts and to comment on them in the margin (Patton, 1990). These comments included ideas and perceptions of particular observations and segments of the transcripts. Each of these incidents, ideas or events was assigned a label that was felt to represent those **phenomena**. The process whereby phenomena are named and coded is referred to as 'open coding' (Burnard, 1991; Corbin & Strauss, 1990). Incidents were then compared for common phenomena to be assigned common names (Corbin & Strauss, 1990). The data was conceptualised in this manner to facilitate the large amount of data in the transcriptions.

Once the phenomena had been identified, they were reduced to **categories**. Categories were assigned names that were more abstract than the names assigned for the concepts. Category names were still however sufficiently transparent in order to remind the researcher of the raw data. Categories were further developed in terms of their properties and dimensions (Corbin & Strauss, 1990). These characteristics formed the basis for differentiating categories and sub-categories.

Patton (1990) suggests that data be organised into **topics and files**. Therefore, each category was allocated a separate category sheet. A coding procedure was carried out to ensure that the context of the data remained intact during further analysis. Information pertaining to a topic was then cut from a copy of the original data and inserted within a category sheet.

At this stage in the analysis, categories were examined for **convergence, divergence** and **completeness**, as proposed by Guba (1978 in Patton, 1990). That is, patterns and

categories were 'fleshed out' (divergence) in order to ascertain which information could be grouped (convergence) appropriately in particular categories. This process was achieved in the following way, as proposed by Patton (1990).

- Searching for regularities in the data
- Judging categories in terms of their internal and external homogeneity[13]
- Working back and forth between the data and classification systems to verify meaningfulness and accuracy of placement of data within certain categories
- Prioritizing categories by determining which categories were more important in terms of features of saliency, uniqueness and credibility.

Sets of categories were tested for **completeness** by:

- Extension – building on items of information already known
- Bridging – making connections between different items
- Surfacing – proposing new information and verifying its existence.

At this stage certain categories were combined to form **themes**, defined by Ely (1991) as statements of meaning that run through most of if not all of the data.

In the final stages, the data were searched in order to find information that **challenged the established hypotheses** (Corbin & Strauss, 1990). When challenging the patterns that seemed to be apparent, alternative explanations were sought out, identified and described. It was deemed necessary to demonstrate the reason for a particular explanation being the most plausible (Corbin & Strauss, 1990).

4.8 QUALITY CONTROL

Particular procedures were adopted to ensure that the results of the research were reliable, valid and free from bias.

[13] *Internal homogeneity* refers to the extent to which data in a category hold together. *External homogeneity* refers to the extent to which differences in a category are bold and clear (Guba, 1985 in Patton, 1990).

4.8.1 Reliability Measurement for Communication Transaction and Interaction Data

"Reliability should be a central concern because it is a necessary, although not sufficient, prerequisite to the validity of scores" (Strong & Shaver, 1991:96). If assessment is not reliable, that is, if the results of measurement are not consistent and repeatable, scores will lack meaning (Strong & Shaver, 1991).

Numerous studies reveal that transcriptions and coding of the same utterance may show considerable differences. These differences may arise either when the treatment of data is carried out by different transcribers (between-observer variation) or by the same transcriber but at different times or under different conditions (within-observer variation), (e.g. Pye, Wilcox & Siren, 1988 and Shriberg & Lof, 1991 in Cucchiarini, 1996). Moreover, perceptual judgements are subjected to measurement errors in that they tend to include an element of subjectivity (Cucchiarini, 1996).

In view of the above precautions, reliability measures or rather agreement indices were provided in this study because transcription data was generated and used. As outlined in the steps carried out in the treatment and analysis of data, both inter- and intra-rater/coder reliability measures were carried out for transcription and coding of data. Inter-rater reliability measures were carried out for tallying the particular codes.

It is believed that reliability of observations in this study was enhanced by the in-depth nature of the personnel training prior to the treatment and analysis of data, and the researcher's support offered throughout. Moreover, multiple viewings of the video-taped data were carried out and all personnel worked independently as well as in collaboration throughout the treatment and analysis of data. The contributions of the research personnel consisting of two Deaf and three hearing personnel were believed to contribute towards enhanced validity of the findings of this investigation into caregiver-child communicative interaction.

Reliability scores were calculated using the formula of:

Agreements ÷ [Agreements + Disagreements]

A percentage was then calculated.

This formula has been commonly employed in reliability measurement in previous studies (e.g. Ogilvy, 1995; Lederberg, 1993; Lartz & Lestina, 1995; Hampson & Nelson, 1993).

The method of point-to-point agreement was employed. This method is perhaps the most widely used method of calculating inter-judge agreement in within-subjects research literature (Hawkins& Dotson, 1975 and Kelly, 1977 in Reynolds & Kearns, 1983).

A minimum acceptable reliability value of 0.75 (Silverman, 1977) was required for this study. If this value was not achieved, an attempt was made to resolve any disagreements between the personnel involved in transcribing, coding and tallying, by having them review and discuss the data until an agreed rating or value was achieved. Nicholas and Geers (1997) propose this method whereby analysis is based upon the clear and unambiguous communicative acts on which all those involved in transcribing, coding and tallying agree.

The results of point-to-point reliability will now be presented.

4.8.1.1 Transcription Reliability

- **Inter-transcriber reliability**

The percentage of agreement between the three hearing personnel for transcription reliability was high, averaging 86.07% across the 16 subject dyads for pre-intervention interactions and 89.29% for post-intervention interactions. Satisfactory reliability was therefore obtained.

- **Intra-transcriber reliability**

Intra-transcriber reliability checks were performed in order to monitor for transcriber drift. Significant drift was not identified on the basis of this measure and intra-transcriber agreement was high. Reliability scores for the three hearing personnel were calculated as 97%, 91.08% and 92.3% for pre-intervention interactions and 94.57%, 90.75% and 89% respectively for post-intervention interactions. Reliability scores for the two Deaf personnel who glossed the data were calculated as 77.8% and 82.4% for pre-intervention interactions and 78.62% and 80.3% for post-intervention interactions.

4.8.1.2 Coding Reliability

- **Inter-coder reliability**

The percentage of agreement between the three hearing personnel for coding reliability was satisfactory, averaging 78.2% across the 16 subject dyads for pre-intervention interactions and 79.46% for post-intervention interactions. Inter-coder reliability scores were lower than those for transcription reliability, in that coding of particular language and communication parameters proved to be complex for the two hearing personnel who assisted the researcher

For example, the complex nature of semantic contingency in interaction sometimes presented uncertainties. The levels of coding of parameters confounded such uncertainties. For each item in the transcript, the coder is to consider the need for codes for the particular function of the communicative contribution, the modality, the success of its use, its possible role in contingency (e.g. in imitation), and whether or not it serves as a directive device. A sound knowledge of the theoretical underpinnings of the language and communication parameters, practical experience in the field of parent-child interaction, and practice in the use of the coding system is clearly necessary for its effective use.

- **Intra-coder reliability**

Calculation of intra-coder reliability allowed for the monitoring of possible coder drift. Reliability scores for the three hearing personnel were calculated as 90.02%, 77.78% and

79.29% for pre-intervention interactions and 91.36%, 79.16% and 81% respectively for post-intervention interactions.

4.8.1.3 Tallying of Frequency Counts of Codes

- **Inter-scorer Reliability**

As was the case with transcription and coding reliability, reliability of tallying was satisfactory across personnel. The average percentages of agreement were calculated as 91.2% across the 16 subject dyads for pre-intervention interactions and 93.3% for post-intervention interactions.

4.8.2 Reliability of the Evaluation Questionnaire Data

The researcher did not rely upon inter-rater reliability measures for the accuracy of the transcriptions of the evaluation questionnaire responses. Only the responses to the open-ended questions needed to be transcribed. These responses were typically short in length and of little complexity, contributing to ease of transcription. Transcription of the responses was believed to be adequately reliable for the following reasons. The researcher was present during the interviews and later transcribed the audio-tape recorded responses to the open-ended questions. With regard to interviews conducted with the isiXhosa-English interpreter involved in the delivery of the intervention programme, a direct translation of the caregivers' responses was not necessary for the purposes of the thematic analysis. The translation provided by the interpreter was believed to be adequate on the basis of the strong working relationship between the researcher and the interpreter, as well as between the caregivers and the interpreter. Moreover, the verbal manner of presentation and discussion is believed to have enhanced the reliability in that clarifications were possible at the time of the interviews.

4.8.3 Reliability of the Focus Group Interview Data

Reliability of the transcription and translation of focus group interview data was ascertained through comparing 20% of each of the four focus group interviews. To handle language differences and artefacts, first language Afrikaans and isiXhosa speakers, who were proficient in English and who had attained a tertiary level of education, carried out this reliability check together with the researcher.

Satisfactory reliability was obtained for inter-rater reliability of transcription and of translation of all focus group interviews. Any disagreements regarding transcribed and translated data were discussed among the research assistants together with the researcher. Transcriptions and translations were altered according to the consensus reached. Reliability was enhanced in that the research assistants had previous experience in this field of work and were proficient in English. Moreover, as is the case with the evaluation questionnaire interviews, the verbal manner of presentation and discussion in the focus group interviews is believed to have enhanced the reliability in that clarifications were possible at the time of the interviews.

4.8.4 Reliability and Validity in Outcome Evaluation

Useful outcome measures must be both **valid** and **reliable** for estimates of effect to be regarded as credible. Validity is questionable if measures do not represent programme goals and objectives, while an unreliable outcome measure is likely to underestimate the effectiveness of a programme (Rossi & Freeman, 1993).

Two key characteristics of the results of an outcome evaluation are reproducibility and generalisability (Rossi & Freeman, 1993). Heath and Levin (1991) assert that no human service programme is truly replicable, since important variations in the social context of the programmes strongly influence programme effectiveness and contexts vary in an important way. While experimental control and statistical rigour are usually desirable in

evaluation, they may be neither attainable nor appropriate in many early intervention programmes (Simeonsson & Bailey, 1991). The nature of child and family phenomena and the social and clinical context may not warrant the level of measurement and evaluation precision that is characteristic of traditional experimental and analytic manipulations (Simeonsson & Bailey, 1991). These factors are relevant in this study in which an intervention programme was implemented with a group of caregiver-child dyads from disadvantaged communities, and in which ethical considerations arose that influenced the degree of experimental rigour possible. Considerations regarding control groups are presented in this study. Rossi and Freeman (1993) highlight that before-and-after studies are among the least valid of assessment approaches primarily in relation to difficulties experienced in obtaining control groups.

Generalisability refers to the extent to which the findings of an outcome evaluation can be extrapolated to similar programmes or from the programme as tested to the implemented programme (Rossi & Freeman, 1993). In this study, generalisability of the findings may be supported by factors relating to the sample and the setting, as recommended by Rossi and Freeman (1993). However, the focus was to improve the effectiveness of the programme at a specific time for a specific group of people (see section **4.8.4.2 A**).

With regard to the sample, the sample of target units is to be an unbiased sample of the targets that will be or actually are the clients of the programme (Rossi & Freeman, 1993). The caregivers and their Deaf children of this study are believed to constitute an appropriate sample of the population of clients in that participation was on the basis of selection criteria that comply with the goals and objectives of the communicative intervention programme. These criteria applied to children referred to a centre for hearing-impaired and deaf children within a tertiary hospital setting, and to their caregivers who had not received prior formal intervention. The evaluation was centre-based and conducted in the same setting as that of the programme being evaluated. The setting is to resemble that which will characterise the enacted programme (Rossi & Freeman, 1993).

Generalisability of results may well be influenced by variants of the intervention programme (Rossi & Freeman, 1993). For example, the researcher who compiled and administered the intervention conducted the evaluation. Outcome may not be generalisable to programmes for example, that are administered by professionals who do not have the same levels of commitment and skill without prior training.

4.8.4.1 Validity of Data on Communicative Transaction and Interaction

Validity relates to measures being representative of the programme goals and objectives. The video analysis procedure focused on language and communication parameters reflected in the goals and objectives of the intervention programme. The use mostly of quantitative analysis (e.g. frequencies of occurrences of language and communication strategies) supports a view that the reported frequencies derive their validity from the application of validity inferences to the processes and judgements exercised prior to the quantitative analyses.

4.8.4.2 Validating the Data at the Level of Thematic Analysis

Qualitative research is seen to possess high internal validity that is achieved when the researcher is able to demonstrate evidence for the statements and descriptions made. Researchers indicate that they demonstrate the reality of participants through a coherent story line and quotations from their interviews (Patton, 1990).

Focus groups are said to be valid if they are employed to answer research questions that are suited to focus group usage (Krueger, 1994). Findings are valid only if the group facilitator aims to determine the views, perceptions and feelings of participants as opposed to trying to generate decisions and to create consensus (Stewart & Shamdasani, 1990 in Holloway, 1990). Furthermore, the researcher is to interpret the data based upon the participants' experiences of personal and social reality so as not to risk constructing or imposing an inaccurate view of their reality (Minichiello et al, 1990). The same type of interpretation is necessary for the validity of findings for the evaluation questionnaire.

Internal validity has priority in qualitative research (Holloway, 1997). The generalisability of the research – external validity – is more difficult to establish in that qualitative research is usually specific to a particular location and time (Holloway, 1997). Numerous qualitative researchers assert that quality in qualitative research is to be assessed differently from quantitative research. For example, Guba and Lincoln (1989) and Erlandson, Harris, Skipper and Allen (1993) in Holloway (1997) adopt the notions of trustworthiness and authenticity as alternatives to validity. In line with these notions, the research is said to be trustworthy if the research process is carried out fairly and the product is truly representative of the participants involved. A study is authentic when chosen strategies are suitable for the true reporting of the participants' ideas (Lincoln & Guba, 1985 in Holloway, 1997).

The techniques and methods employed to ensure the integrity, validity, and accuracy of findings in this study include the elements of trustworthiness advocated by Lincoln and Guba (1985 in Holloway, 1997) and Guba and Lincoln (2005). According to these authors trustworthiness involves the elements of credibility, transferability, dependability and confirmability.

Enhancing the quality and credibility (or validity) of this study was based upon suggestions primarily by Patton (1990), Lincoln and Guba (1985 in Holloway, 1997), Guba and Lincoln (2005), DePoy and Gitlin (1994) and Joubert and Katzenellenbogen (1997). The numerous constructs applied in this study are described below.

Patton (1990) recommends the following criteria for a credible qualitative study:

A. Rigorous techniques and methods for the collection and analysis of data
B. Credibility of the Researcher
C. Philosophical assumptions of the research design

A. Techniques for the Collection and Analysis of Data

Patton (1990) recommends rigorous techniques and methods for the collection of high-quality data that are analysed with caution, and furthermore that the issues of validity, reliability, and triangulation must by addressed.

Techniques of analysis, according to Patton (1990), that can enhance the quality and validity of qualitative data include searching for alternative explanations, explaining instances and cases that do not comply with the identified trends, and triangulation. Each of these techniques was applied to some extent in the present study, as is indicated in the presentation and discussion of the findings. A particularly important technique requiring attention and reportage is that of triangulation.

- **Triangulation**

Triangulation strategies serve to reduce systematic bias in the data in that triangulation is a process whereby the findings are checked against other sources and perspectives (Patton, 1990; DePoy & Gitlin, 1994). In this way, the researcher can demonstrate that the study's findings are not simply as a result of a single method (methods triangulation), a single source within the same method (triangulation of data sources), a single investigator's biases (investigator or analyst triangulation), or a single theory (theory or perspective triangulation). Use of triangulation indicates a recognition that the researcher needs to be open to more than one way of looking at things (Patton, 1990). Triangulation played an important role in this study in highlighting a clinical perspective on the intervention programme as opposed to a sole reliance upon statistical results and interpretations.

Triangulation of methods and of data was employed through the use of multiple methods in programme evaluation, namely analysis of caregiver-child communicative interaction, evaluation questionnaire interviews and focus group interviews. Moreover, rather than a single source of data within the same method, the primary sources of data were the caregivers and the communicative interactions between the caregivers and their children. In addition, a comparison of quantitative data (e.g. results of caregiver-child

communication interaction) and qualitative data (e.g. observations of communication interaction, evaluation questionnaire responses, transcription of focus group interviews) was undertaken. Triangulation of quantitative and qualitative data is therefore a form of comparative analysis useful in enhancing the quality and credibility of the findings (Patton, 1990).

The triangulation of data by multiple methods was considered to be essential to answer many important questions in research, where there is a combination of complex processes involving a number of factors over time (Cassel & Symon, 1997). Combined with observation, interviews allowed the researcher to understand the meanings that participants hold for their everyday activities (Marshall & Rossman, 1995). Moreover, the combination of methodologies in the study of the same phenomena strengthens the study design (Patton, 1990).

Triangulation was further achieved by means of a comparison of information obtained at different stages and by different means within qualitative methods (Patton, 1990). Comparisons and cross-checks for consistency were made between data derived from observations pre-, during and post- intervention, the evaluation questionnaire data and focus group interview data.

A further triangulation strategy employed was that of **investigator or analyst triangulation**. Various research assistants at various stages in the research process were involved in the collection, treatment and analysis of data, rather than the researcher alone.

Two interviewers, excluding the researcher, facilitated the focus group interviews so as to reduce potential bias arising from a single person (e.g. researcher) collecting all the data (Patton, 1990). In addition, multiple observers were employed during the intervention programme, including the interpreter and the Deaf, signing adults involved in programme delivery. The related strategy of triangulating analysts was employed in that more than one research assistant transcribed, coded and scored the communication data. Analyst triangulation was further achieved in that additional research assistants were involved in transcribing and translating the interviews and comparisons were made.

Finally, **theory triangulation** was employed in that multiple perspectives were used to interpret quantitative and qualitative data. A difference between the process involved for quantitative and qualitative data is that qualitative research is data-driven as opposed to theory-driven. Theory is generated from the data collected in that it is grounded in the data. This theory generation allows for flexibility in the process of conducting the research and allows the researcher to formulate new hypotheses and alter previous hypotheses as the research progresses (Cassel & Symon, 1997).

- **Credibility**

Credibility exists when participants recognise the truth of the study's findings in their own social context. Triangulation is one of the checks on the truth-value (Lincoln & Guba, 1985 in Holloway, 1997).

According to Miller and Kirk (1986) it is not possible to control all research variables. In this study, an attempt was made to control for the following variables:

- All participants satisfied the participant selection criteria. In this way, the quality and the credibility of the data obtained in the interviews was ensured.
- The characteristics (e.g. socio-economic and cultural) of the participants/informants were presented so that the findings could be interpreted in context. Joubert & Katzenellenbogen (1997) point out the importance of reporting these characteristics in order to provide an indication of the reliability of the responses in qualitative research. A detailed participant description is presented in this study. It is believed that the responses of the caregivers are reliable and that the findings could be correctly interpreted within context. Moreover, a description of the programme to which the participants had been exposed in this study was presented. As a result, an indication of the reliability of the responses has been made possible (Joubert & Katzenellenbogen, 1997).
- Research methods and participants have been carefully described and contextualised. In so doing, boundaries of the study are established (i.e. the parameters will have been identified) and the credibility and hence the validity of the research is ensured.

- The small segment of focus group interview data that could not be transcribed could be attributed to speaker variables. Firstly, the caregivers' voices were sometimes inaudible. Secondly, more than one caregiver spoke simultaneously at times.

- **Transferability**

Transferability implies **generalisability** – or external validity – of findings to similar contexts or participants (Lincoln & Guba, 1985 in Holloway, 1997). In this study, the data has been described accurately and in detail in its context. However, the aim of the evaluation was not to generalise the findings beyond the particular setting. The purpose of evaluation is a formative evaluation to improve the effectiveness of the intervention programme at a specific time for a specific group of people (Patton, 1990). Moreover, the small sample sizes in qualitative methods are a common concern and makes generalisation difficult (Patton, 1990). Yet, findings on a sample, however large, frequently lose sight of their context and the richness of the data when generalisations are made across time and space (Patton, 1990).

- **Dependability**

Dependability – or **reliability** – refers to consistency and accuracy that can be indicated by means of an **audit trail** (Lincoln & Guba, 1985 in Holloway, 1997). According to Polgar and Thomas (1991) the researcher is more a part of the phenomenon under investigation in qualitative research than in quantitative research. An audit trail involves the researcher reporting the path of the research (DePoy & Gitlin, 1994) by recording details on the methods and decisions made prior to and during the research process (Holloway, 1997). The purpose of the audit trail is to allow readers to judge the trustworthiness and authenticity. Through the quality of the audit process, the researcher can demonstrate the quality, credibility and rigour of the work (Rodgers & Cowles, 1993 in Holloway, 1997).

The elements of the audit trail as outlined by Holloway (1997) that were involved in this study include:

- A description of the research design that includes the aims of the study
- A record of the materials, methods and procedures
- An explanation of the location of participants
- A description of the data collection and analysis processes
- Excerpts from the data (such as quotes of caregivers from the focus group interviews and excerpts from caregiver-child communicative interactions)

Moreover, the context was described in detail in this study. Although not documented here, the researcher also recorded field notes at various stages in data collection (e.g. following video recording of communicative interactions and focus group interview discussions with facilitators) as well as notes on observations made during intervention programme sessions, relating to aims for each session and to interesting observations.

The role of the researcher is indeed important in the study (Cassel, 1989 and Cassel & Fitter, 1992 in Cassel & Symon, 1997). Since qualitative methods are frequently more interactive, intensive, and involve a more long-term commitment, researchers invariably establish a social relationship with the organisational members. Consequently, the researcher gains greater insight into their collective understanding by actively sharing that experience.

- **Confirmability**

An audit trail can be employed to demonstrate confirmability by indicating that the data can be traced back to its origins. The concept of confirmability implies that the findings are due to the research rather than an outcome of researcher biases and subjectivity (Lincoln & Guba, 1985 in Holloway, 1997). Interviewing styles and relationships with informants for example, are inherently subjective. The natural subjectivity of the researcher and other evaluators may well then shape the research (Marshall & Rossman, 1995).

Several strategies were employed in an attempt to minimise biases:

- Prior to the focus group interview sessions, the researcher emphasized the importance to the facilitators of being non-directive and keeping responses non-judgmental
- All collected data was stored in a retrievable and organised form so that it could be assessed if needed. Reliability in qualitative research can be attained through thorough and careful documentation of research procedures (Miller & Kirk, 1986).

B. Credibility of the Researcher

The credibility of qualitative inquiry is especially dependant on the credibility of the researcher, which may be influenced by factors such as qualifications, experience, and perspective (Patton, 1990). Patton (1990) strongly recommends that any information – personal or professional – that may have influenced the collection, analysis and interpretation of the data in a positive or negative manner, be reported.

The researcher conducting the present study is a Speech-Language Pathologist & Audiologist who aimed to enhance the credibility of the qualitative study by means of the following:

- **Intellectual Rigour**

In order to ensure that the constructs, categories, explanations and interpretations made sense, the researcher returned to the data numerous times (Patton, 1990). Moreover, the researcher engaged in numerous discussions with the group facilitators and transcribers. In this way, the researcher believed that the analysis and interpretation of the evaluation questionnaire and focus group interview data would truly reflect the nature of the phenomena.

- **Evaluator Effect**

The researcher minimised any negative or directed influence on the focus group interview findings by not being present during the interview sessions. Patton (1990) points out that the presence of the evaluator can in fact distort the findings of a study. Even though the researcher was present throughout the programme sessions, observations made during these sessions were not intrusive. Rather, the researcher and observers (excluding the caregivers) participated in the sessions and engaged in note-taking and discussions outside of the sessions.

An additional issue affecting evaluator effects is that of competence. According to Patton (1990) competence refers to factors such as training and preparation. Furthermore, competence is revealed through the use of validation procedures that establish quality in analysis, as well as through consistent fairness and responsibility (Patton, 1990).

The researcher may be considered competent in view of the procedures undertaken to enhance the quality and credibility of the study, as outlined in this section. Fairness contributes towards an authentic study (Lincoln & Guba, 1985 in Holloway, 1987). Throughout the study, the researcher made efforts to gain the acceptance and continued consent of participants. Moreover, the social context in which the participants live was considered at all stages in the research process, and deemed critical in the interpretation of the findings.

C. Philosophical Assumptions of Research Design

The use of focus groups in this study for evaluation purposes implies that phenomenology[14] has a place in this qualitative research. It is thus necessary to examine the underlying assumptions and orientation of the study.

[14] Phenomenology is a philosophical approach to studying phenomena and human experience. It is an attitude to human existence (Holloway, 1997).

The researcher has employed an approach to evaluation that includes a pre-post quasi-experimental design, qualitative data and thematic analysis. The rationale for the use of an evaluation questionnaire and focus group interviews in a qualitative inquiry in addition to quantitative measures has been presented. From a theoretical and philosophical persective, this use of multiple measures of evaluation yielding qualitative and quantitative data spans both the constructivist-interpretive and positivist/post-positivist research paradigms, as described in section 4.2.

All attempts within the nature and scope of this study were made in order to enhance the trustworthiness, credibility, and rigour of this research. The observations made are believed to be factual rather than being distant from the phenomenon under investigation (Patton, 1990). As already highlighted, researcher trustworthiness is a dimension of rigour. In compliance with Patton (1990), importance has been placed upon providing argument and evidence for researcher credibility and trustworthiness, fairness and balance.

4.9 Pilot Study of Dyadic Interaction

A pilot study was conducted over a two-year period prior to initial data collection. A quasi-experimental design was employed. A total of 13 caregiver-child dyads participated in the pilot programme. Dyads comprised those severe-profoundly deaf children under the age of five years who were referred to the Deaf Child Centre within a tertiary hospital setting. All caregivers and their children were members of socio-economically disadvantaged communities with referral access to this particular tertiary institution. The purpose of the pilot study was to refine aspects of the methodology, including treatment and analysis procedures.

The **aims** of the pilot study were as follows:

- To investigate the need for a formal communication and sign language training programme for hearing caregivers of young, deaf signing children from socio-economically disadvantaged communities;

- To compile and validate a set of communication and sign language parameters; and
- To determine and refine procedural aspects of the methodology.

Following the pilot project, numerous modifications were made. Some of the main modifications are outlined in **Appendix 7**. The majority of the modifications related to the treatment of the videotaped data. In conclusion, it is believed that the extensive pilot work proved to be very beneficial to the outcome of the communicative intervention programme.

In this chapter, the methodology adopted in this study has been described. The results of the numerous analyses for the purposes of determining the effectiveness of the communicative intervention programme, that have been described in this chapter, are presented in the following two chapters. Chapter Five presents and discusses the results of the analysis of communication and sign language pre- and post- intervention. Chapter Six presents and discusses the qualitative findings of the thematic analysis of the evaluation questionnaire interviews and the focus group interviews that were conducted post-intervention.

CHAPTER FIVE:
RESULTS AND DISCUSSION: EVALUATION OF THE DEVELOPMENT OF COMMUNICATIVE TRANSACTION AND INTERACTION

In this study, observations of communication transaction and interaction during play and storytelling, in the form of frequency counts that were recorded by means of the coding system pre- and post- intervention, allowed for determining evidence for or against the existence of change. In the event of change, the nature of the change and possible explanations for change were made possible, in that the pre-post comparisons yielded both quantitative and qualitative information for each of the 16 dyads and hence the group as a whole. Quantitative analyses served primarily to indicate general trends on the basis of the group data. In some instances, qualitative findings will be incorporated in a discussion of the results in an attempt to explain quantitative results and/or to account for individual differences over time. Further qualitative findings are presented for particular observations that were not subjected to statistical analysis, in order to provide greater insight into the nature of particular communication strategies and aspects of communication employed by the caregivers. Hence, the richness of the data captured during video-recording of the caregiver-child interactions is maintained and reported.

The general pattern identified on the basis of descriptive statistics in most of the observations across the 16 dyads was that of an increased occurrence of use of communication parameters that did not constitute a breakdown in communication. As will be discussed below, the general increase in use indicates a degree of improvement in communication transaction and interaction across the group of subjects. A common unidirectional change could thus be inferred. Consequently, evidence for possible explanations associated with the change was sought by means of descriptive and inferential statistical analyses.

This section of the results will proceed according to the statistical analyses undertaken in order to determine evidence for and/or against change over the course of the intervention, and is accompanied by possible explanations for the causal factors associated with change. In addition, relevant qualitative interpretations will be presented. Explanations

for no change in the use of particular communication behaviours are also considered. In this way, these analyses ultimately seek to answer the following two questions. Firstly, which specific strategies are effective for achieving what specific learning outcome? Secondly, what relationship/s exist/s between the communication strategies?

The use of non-parametric tests suitable for small sample sizes, rather than commonly employed parametric tests, was felt to enhance the validity of the statistical procedures and hence the inference obtained. Furthermore, the median value, rather than the mean value, of observations is preferred in this study in order to illustrate the general occurrence of communication parameters across the 16 dyads. The mean is influenced by extreme scores (frequency of observation) while the median corresponds to a value having half of the numerically ranked observations below it, and half above it (Howell, 1989).

For the purposes of this study, probability levels of 0.05 and of 0.01 were applied. By convention $p<0.05$ is a first numerical indicator for change while $p<0.01$ allows for stronger evidence (Howell, 1989). Where applicable, the p-values obtained will be presented in order to reflect the extent to which the evidence of change can be confidently generalised to the population of hearing caregiver-deaf child dyads represented by the observed sample of 16 dyads in this study. It will become evident in the following results that many of the p-values in fact were very much lower than 0.05 and/or 0.01, indicating stronger evidence for change.

Since observations for particular communication variables for each of the 16 subjects were recorded prior to the intervention, and observations for the same set of variables recorded following intervention, additive and multiplicative types of change are reported in this study. That is, the differences (after-before intervention) and the ratios (after/before intervention) respectively were examined for each of the 16 subjects.

Negative differences denote additive decrease, and positive differences denote additive increase over the 12-week time period. Zero difference indicates no change within the

individual case (Howell, 1989). Hence, the greater the difference above zero, the greater the increase in use of a particular communication variable.

Ratios below and above one denote multiplicative decrease or increase, respectively. These changes correspond to increases or decreases in the rate (per unit time) at which the strategies are observed (T. Dunne, personal communication, February 2003). The logarithm of the ratios was calculated in order to legitimate the use of the same robust tests of change that were applied to the additive scales. Calculating the logarithm of the ratios yielded negative logarithm numbers for decreases and positive logarithm numbers for increases, with zero corresponding to no change. A zero change in the use of a particular communication variable implied that the particular case was included in the difference analysis but not in the logarithm ratio analysis of that variable because logarithm of zero is not defined.

In this study, for each communication variable observed for which the occurrence did not constitute breakdown, evidence was sought from the aggregation of the differences, and from the logarithm ratios, for a general pattern of increased success for various communication strategies that enable improved communication. An increase in use of strategies is interpreted as improved dyadic communicative interaction. The primary reason for this decision was that all communicative behaviours recorded on the coding system did not constitute breakdown and were considered to encourage rather than limit child language and communication development. It will become evident in the discussion of the results that the use of 'directives' by the caregivers following the intervention reflected a positive interaction style rather than a didactic style of communication.

Two types of variables were examined. One type of variable was the composite variables, namely attention-getting (AG) strategies, eye gaze patterns, meaning and cohesion illocutions. These composite values were constructed by summing various related frequency counts of the constituent variable under investigation, with the intention of eliciting umbrella information about each of the 16 cases. Since composite variables are simply plausible attempts to aggregate reasonably across constituents, they may be open to contextualized critique. The other type of variable was the constituent variables as

observed and recorded (e.g. AG strategies per mode of delivery). Note that these variables did not contribute towards communication breakdown. Qualitative findings on instances of breakdown and repair are presented in section **5.4.2** below.

When a variable gives rise to statistically significant improvements on both the difference and the logarithm ratio scales, one may infer that very marked numerical changes have occurred (T. Dunne, personal communication, February 2003). Even though both scales reflected evidence of change in most of the tests applied, the additive scale primarily elicited sufficient evidence of change. This scale alone is satisfactory for an inference that numerical evidence suggests the existence of change (T. Dunne, personal communication, February 2003). The overall stronger evidence for additive change is possibly due to the large increases in frequency counts post-intervention that were near zero pre-intervention.

The quantitative results and their qualitative interpretation will now be presented. In addition, related data that was not subjected to statistical analysis will be discussed. The findings regarding communication breakdown and repair, aspects of contingency, and sign language parameters will then be discussed in order to provide more in-depth information on the richness of the communication transaction and interaction.

5.1 PRE-POST-INTERVENTION COMPARISONS

Statistical tests were applied to the differences and the logarithm-ratios of each variable under investigation. Paired sample t-tests of a null hypothesis of zero change could have been used but since there were 16 subjects and the assumptions of normality not appropriate for count data, a more conservative but universally valid test was used, namely the Wilcoxon signed-rank test (Howell, 1989). The important output for inferences for change from this test is the p-value, one for the differences and another for the logarithm ratios.

The extent of the numerical evidence obtained for change over the course of the intervention may be regarded as clearly sufficient for an influence of an effect of

improved communication that is likely to be associated with participation in the communicative intervention programme for a population represented by the 16 dyads. The change, and in some cases no change, identified regarding the composite variables and their constituents will now be presented. Particular meaning and cohesion illocutions under investigation are discussed, as far as possible, according to the subcategories of these illocutions, as depicted in the coding system (see Tables 4.4(a) and 4.4(b) of Chapter Four).

Given the reciprocity of interaction, the effect that each communication partner has on the other cannot be disregarded. Clearly, the communication style of the caregivers rather than of their children was the focus in this study. Aspects of interaction that are heavily influenced by the caregivers' or by the children's interactive styles were not explored. However, knowledge of individual styles of the caregivers and children was necessary in shaping the communicative intervention, and factors of the children, such as age, were considered in the interpretation of the results. It was felt that such factors were likely to have an impact on delineating appropriate caregiver strategies.

In agreement with Girolametto (1988) explanations of the role of input to language acquisition and development must consider factors intrinsic to the child, aspects of the linguistic environment, and broader factors such as demographics. The broader context of development is discussed in Chapter Six.

5.1.1 Composite variables

A statistically significant difference ($p<0.001$) was identified on both the difference and multiplicative scales following the 12-week intervention in terms of all four composite variables. The degree of this observed improvement reflects the significant increased use by the caregivers of successful AG strategies, of eye gaze patterns, of meaning and of cohesion illocutions in interactions with their children. In particular, the largest increase for the group of subjects occurred in the use of cohesion illocutions. As mentioned in Chapter Four, cohesion illocutions as defined in this study concern the use of language to

establish and maintain relationships, hence the interactional use of language, while meaning illocutions concern message transmission or transaction. The increased use of meaning and cohesion illocutions indicates the greater use of caregiver contributions that do not constitute breakdown and enhanced caregiver-child interactions respectively.

Figures **5.1**, **5.2**, **5.3**, **5.4** illustrate the aggregated totals of frequencies of observation for each of the composite variables pre- and post- intervention. The blue dots represent the total use of the particular composite variable pre- and post- intervention. The three lines that are presented in the graphs illustrate the evidence obtained by means of the Wilcoxon analyses of no effect or an effect, of either additive and/or multiplicative change. The presence or absence of an effect is based upon the median difference and ratio values obtained from the pre- and post- counts. Since increased use was obtained from all 16 observations for each of the four composite variables, all occurrences in each of the four graphs are indicated above the no change line. Since the effect lines were plotted on the basis of the median value, the effect lines divide the number of the subjects equally. Furthermore, the additive effect line is parallel to the line representing no change because additive shifts give rise to parallel lines. However, the multiplicative effect of ratios gives rise to changes in the slope of lines through the origin (T. Dunne, personal communication, February 2003).

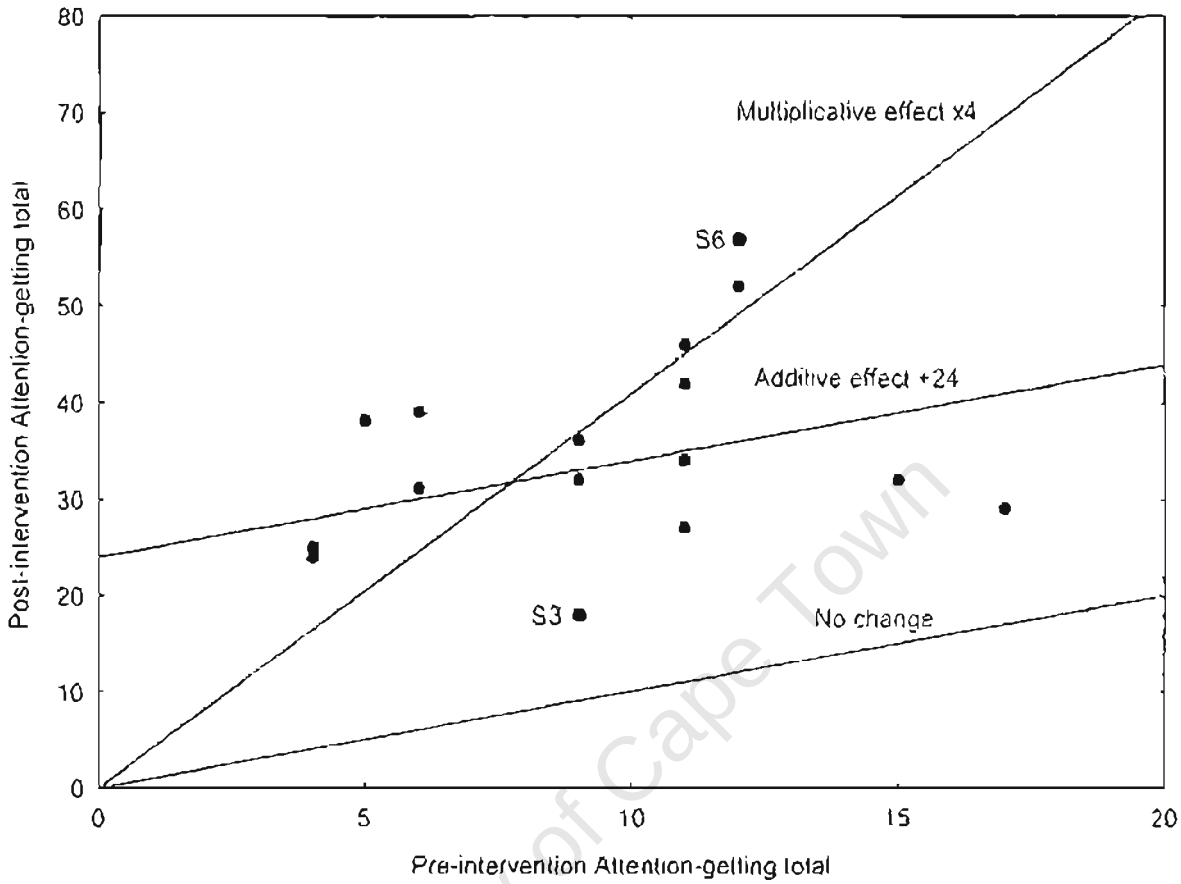


Figure 5.1: Pre-post-intervention Use of Successful Attention-Getting Strategies

As depicted in Figure 5.1 the significant increase in use of successful AG strategies was such that in general, the caregivers used an additional 24 successful attempts (median difference) post-intervention, the multiplicative effect being four times as many successful attempts following the intervention as prior to the intervention. The most improvement in terms of successful attempts at gaining the child's attention, as indicated in Figure 5.1, was identified for S6.

In view of the ages of the children in this study and the importance of caregiver training to facilitate child development, developmental factors cannot be disregarded in the interpretation of the results. According to Lederberg (2002) hearing and deaf toddlers of hearing parents typically begin to integrate attention to people and the environment from the age of 12 months. This intentional alternating of attention between the

communication partner and the environment increases over the second year of life. In line with this research, the caregiver of the second youngest child (of 1.2 years at the start of the study) in the group, S3, was in fact found to make the smallest change in use of successful attempts, even though this increase was positive.

Adamson (1985 in Lederberg, 2002) points out that the intentional alternating of attention between the environment and communication partner is the defining feature of co-ordinated joint attention. Co-ordinated joint attention enables toddlers to communicate and share meanings with their partners about objects and events, and to learn the symbolic forms to label these events (Lederberg, 2002).

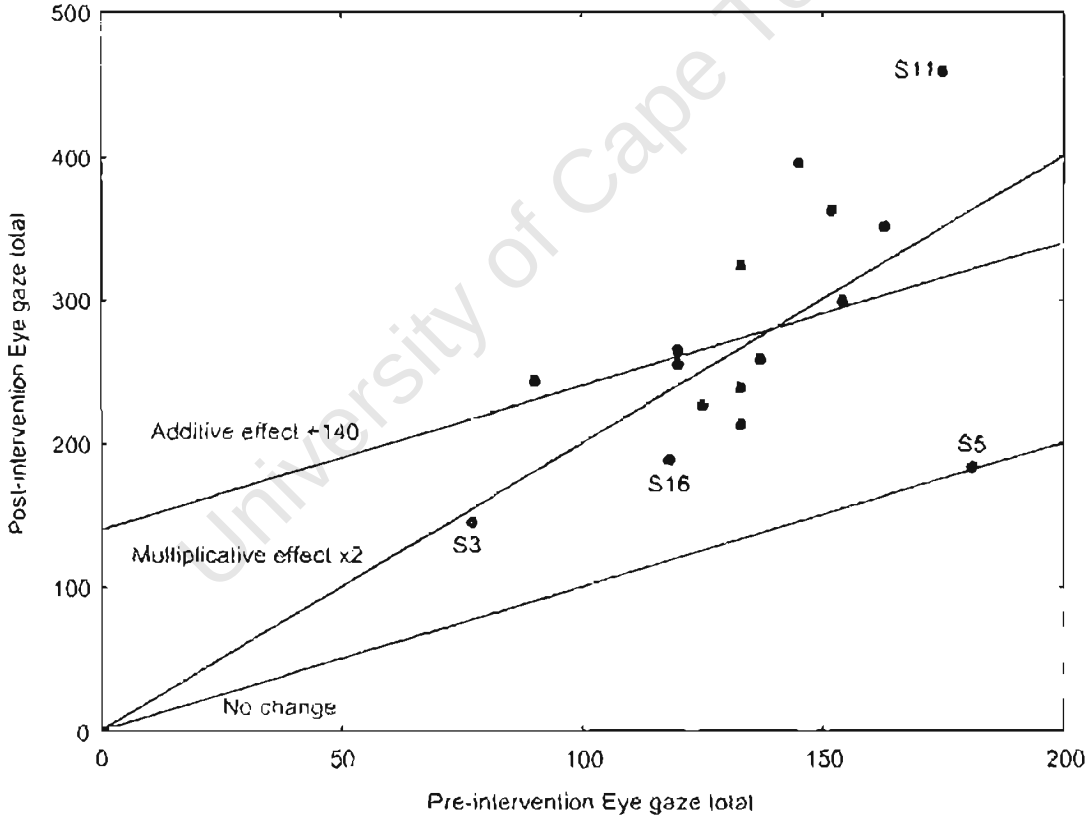


Figure 5.2: Pre-post-intervention Use of Eye Gaze Patterns

The significant additive and multiplicative change in use of eye gaze patterns across the 16 subjects is depicted in Figure 5.2 above. In general, caregivers made frequent use of

various eye gaze patterns overall prior to the intervention. S5 produced the smallest increase in use of eye gaze. However, Figure 5.2 illustrates the relatively high frequency of eye gaze for S5 pre-intervention, which may not have necessitated as large an increase in comparison to those caregivers (e.g. S3 and S16) who used far fewer eye gaze patterns pre-intervention. S3 and S16 were the caregivers of the two youngest children participating in this study.

A general pattern of lower increases in use of communication behaviours was in fact identified for the caregivers of the youngest children (<2 years at the start of the study) participating in the study. For example, it became evident that S1, S3, and S16 used a greater number of communication parameters following intervention, which did not constitute breakdown, yet their increased use of behaviours was not as marked overall as the increased use by the caregivers of the older children.

It was not only the *age of the child* but also the *age of the caregiver* that appeared to be important in interpreting the findings in this study. S5 was one of the two grandmothers who participated in the intervention. Although the overall pattern of change was one of increased occurrence for S5, little change was observed over time, relative to the other caregivers, in terms of the frequency of use of particular communication strategies. With regard to eye gaze, S5 began with the highest counts on several variables prior to the intervention yet was in a much lower rank post-intervention. Knowles (1987) asserts that a group of adults, particularly one that comprises varying ages, is likely to have a wider range of for example, ability and learning styles, than is true of any group of youth.

Apart from age as a possible influence on learning and the use of communication behaviours through sign language, some possible contributing factors include *culture* and *education*. Cultural factors, such as communicative interaction patterns used in the isiXhosa culture (of S5) may be influential (Louw & Avenant, 2002). Moreover, the low level of education attained by and the history of inequalities in education for S5 may be particularly important in interpreting the qualitative observation of decreased occurrence of gaze patterns with the storybooks.

Unlike S5, S11 made the most improvement across the group on several variables, as indicated in Figure 5.2, in her use of eye gaze patterns.

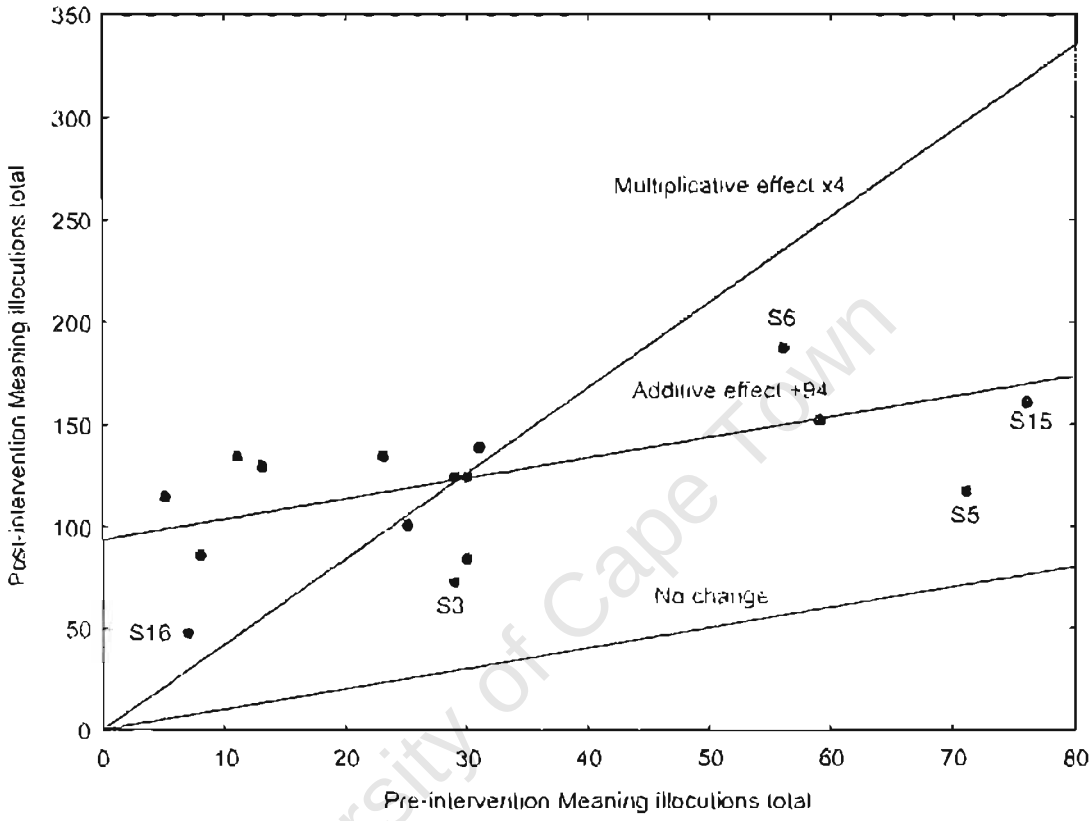


Figure 5.3: Pre-post-intervention Use of Meaning Illocutions

As depicted in Figure 5.3, the use of overall **meaning illocutions** by the caregivers of the two youngest children (S3, S16) increased the least, while the occurrences for S6 showed the largest improvement across the group. As was the finding for eye gaze, one of the older caregivers (S5) made frequent use of meaning illocutions pre-intervention and although this use increased, the increased use of transaction techniques was small in comparison to increases observed for the entire group of caregivers. In this case, the *age* of S5 may be a contributing factor in the acquisition and use of sign language for the purposes of language stimulation. As depicted in Figure 5.3, S15 made particularly good use of meaning illocutions pre-intervention. The *age* of the child of S15 may well have contributed to this occurrence in that he was the oldest child in the group.

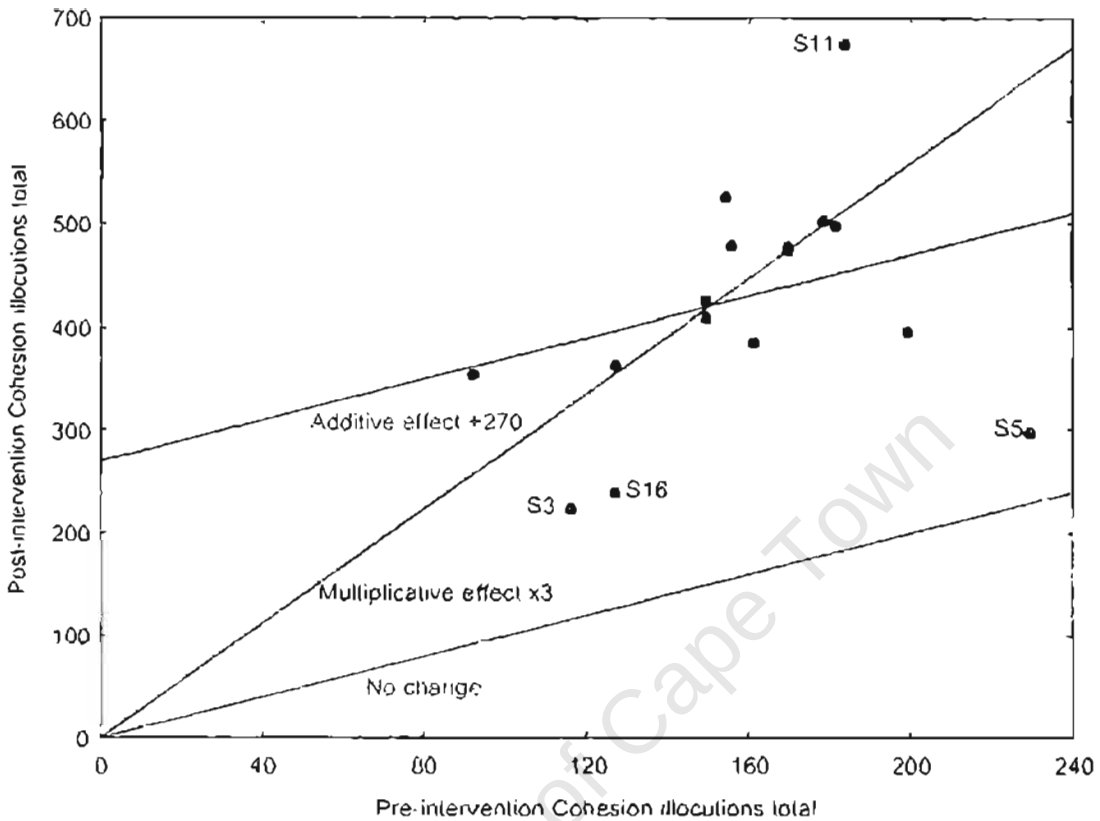


Figure 5.4: Pre-Post-intervention Use of Cohesion Illocutions

The largest additive change in use of the various composite variables was identified for cohesion illocutions, as highlighted in Figure 5.4. The magnitude of the increase in use of the more socio-interpersonal communicative behaviours is a particularly positive finding in view of the emphasis in the intervention programme on contingency in interaction. The importance of this increase is further highlighted by the observation that, despite cohesion illocutions (and eye gaze patterns) being frequently employed prior to intervention, in comparison to the use of attention-getting and meaning illocutions, the caregivers' increased use of cohesion illocutions attained a ratio of increase of a median factor of three. That is, cohesion illocutions occur at a rate that increased three-fold.

A depicted in Figure 5.4, S11 made the most improvement across the group in her use of cohesion illocutions. Once again, the *age* of the children and of the caregivers appeared

to contribute to smaller increases in use of communicative behaviours. The relatively small increases in use of interaction behaviours by S5, S3 and S16 are evident in Figure 5.4. As with the use of eye gaze and meaning illocutions, S5 made frequent use of cohesion illocutions prior to the intervention relative to the remainder of the group. These relatively lower increases may thus be accounted for by frequency of use pre-intervention.

5.1.2 Constituent variables

Tables 5.1, 5.2, 5.3, 5.4 indicate the p-values with the median, minimum and maximum difference values in order to reflect some features of the data that contribute to the inferences about change in the use of the various constituent variables. Note that the absence of a p-value for the ratio scale indicates that some of the subjects did not make use of the particular strategy post-intervention and calculation of ratios was thus not possible. These results are presented in table form according to the respective composite variables.

- Use of Attention-getting Strategies:

Table 5.1: Descriptive Statistics for the Pre-Post-intervention Change in Use of Successful Attention-Getting Strategies

Constituent Variables	Difference			P Value	
	Median	Minimum	Maximum	Difference	Log ratio
Physical AG	10	-1	24	< 0.001	0.002
Point AG	9	2	33	< 0.001	< 0.001
Sign AG	0	0	5	0.07	
Gestural AG	2	-4	16	0.09	0.274
Nonmanual +Gestural AG	0	-1	2	0.312	
Physical + Gestural AG	0	-1	2	0.75	

The full range of AG strategies used by the caregivers was documented in order to identify the commonly used type/s of strategy that successfully gained the attention of the children. The nature of unsuccessful strategies was also examined. Table 5.1 indicates that very marked evidence for additive and multiplicative change was identified with regard to the use of **pointing** and the **physical modality** in successfully gaining the child's attention. Strong evidence for additive change was identified for use of the **sign** modality even though this modality was not employed by all of the caregivers. Similarly, Jamieson (1994) reported the use of signing by deaf mothers to gain their young deaf children's attention (e.g. LOOK).

Point attention-getting occurrences were coded in the sign modality of delivery in the coding system, in light of the importance of pointing in sign language. Moreover, this form of attention-getting applied only to present as opposed to absent referents. Qualitative observations indicated that pointing was more commonly used during storytelling than play interactions. Physical/tactile AG strategies were more commonly used across the group than signed forms, both pre- and post- intervention

In addition to these three forms of AG strategies, the caregivers generally made greater use of **visual/gestural** means over time, hereafter referred to as gestural means. The greatest increase in use across the caregivers was used by S16 whose daughter was the youngest child participating in this study. In agreement with Prendergast and McCollum (1996) hearing caregivers need support in determining which AG strategies are more successful in which contexts, and in regularly evaluating the appropriateness as the child's as well as the caregiver's skills develop. In highlighting the differing needs of the caregivers of children of different ages, the communicative intervention programme addressed the types of strategies commonly used in deaf parent-deaf child interactions, and the frequency of use required for different ages and communication skills of the caregiver and child in the dyad.

An overall greater awareness and use of gestural techniques, although not statistically significant, is a positive finding in view of the visual-gestural nature of sign language. Although to a lesser extent, some of the caregivers used gestural means in combination

with either non-manual features or physical/tactile means in successfully gaining the child's attention. Swisher (1991:123) points out the tremendous value of visual/gestural and tactile/physical means of attention-getting, arguing that failure of hearing mothers to provide these cues indicates the need for early intervention programmes "to sensitize parents to the receptive requirements of the visual modality".

Pointing has sometimes been referred to as linguistic gesture in the literature on communicating with deaf individuals (see Maestas y Moores, 1980; Caselli, 1983; Jamieson, 1994) and other times distinguished from gesture as pointing signs (see Meier, 1990). If pointing as a means of gaining the children's attention was not coded separately from gestural AG strategies in this study, the occurrence of gestural means would have been far higher than reflected here. Hence, the common use of gestural AG strategies used among deaf parent-deaf child interactions and in the deaf community (Swisher, 1991), would have been identified.

The various forms of attention-getting that proved to be successful on a more frequent basis over time are particularly important in communication through the medium of sign language as they indicate a visual-gestural rather than an auditory orientation to interaction with the young deaf children. In view of the increased use of meaning and cohesion illocutions, the evidence of increased successful AG strategies indicates that the children received more of their caregivers' socially directed behaviours.

Lederberg (2002) and Lederberg and Prezbindowski (2000) point out the importance of heightened visual attention for deaf toddlers of hearing parents, such as that shown by deaf infants of deaf parents, in language development. As the child's language develops, s/he is able to integrate language into episodes of joint attention (Lederberg & Prezbindowski, 2000). For the deaf child, visual attention to the caregiver is prerequisite to the development of communication skills (Swisher, 1991 & Wood, 1989 in Prendergast & McCollum, 1996). Training in and support of caregivers in visual AG strategies was found to be critical in this study.

The marked evidence of change in terms of greater use of successful attempts is a particularly positive finding when one considers the common problem of divided attention among young deaf children. Since interaction in sign language requires visual attention to the communication partner, both the adult language and the particular social context for that language must be attended to visually by the child learning sign language. In this way, the child is required to divide his/her attention between language and the relevant context (Galloway & Woll, 1994).

In addition to the increased use of successful AG devices, qualitative observations indicate that these devices were generally used prior to the caregivers' communicative acts addressed to the child. This observation suggests greater success in the delivery of these acts and hence, the possibility of increased as well as meaningful interaction. Deaf people tend to use a sequential visual approach in communicative interactions, one that is far more effective than the simultaneous visual-auditory approach used by hearing people, for conveying information to and/or between deaf children and adults (Jamieson, 1994). Qualitative observations and contingency results in particular, in this study reflect a sequential approach with a greater visual orientation than was identified pre-intervention. The initial step in this approach was an attempt to gain the child's attention.

The occurrence of unsuccessful attempts at gaining the children's attention was subjected to statistical analysis using the Wilcoxon signed-ranks test in order to examine the presence of unsuccessful strategies in use over the course of the intervention. A result of clinically significant change was obtained. It is inferred that the range of AG strategies used - both successful and unsuccessful - is indicative of attempts to engage in transaction and interaction with the children. It may be argued that as these attempts increased, a greater possibility arose not only for successful but also for unsuccessful AG strategies The ratios of the caregivers' total successful use of AG strategies to total unsuccessful attempts were obtained for pre- and post- intervention. This comparison of ratios enabled an examination of the ratio of success that is free from frequency counts. Figure 5.5 graphically illustrates the ratio of successful to unsuccessful attention-getting attempts. Only 14 of the 16 subjects are represented because the ratio cannot be calculated for S15 and S9 who made zero unsuccessful attempts post-intervention.

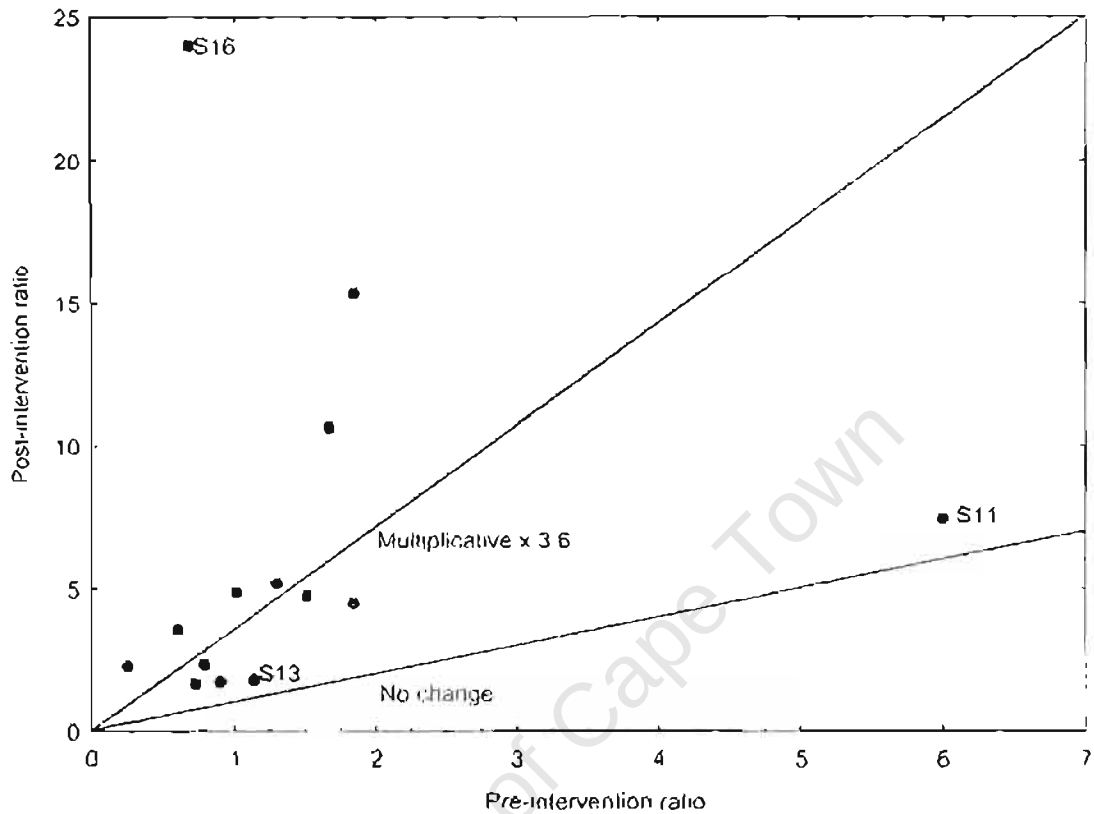


Figure 5.5: Graphic Representation of Successful: Unsuccessful Attention-Getting Attempts Pre- and Post- Intervention

As depicted in Figure 5.5 the ratio of success increased significantly. Hence, the group did not simply use a greater number of unsuccessful attempts at gaining their children's attention but also made use of an increased ratio of success. The success ratio increased multiplicatively by a median factor of 3.6, indicating that the fraction of unsuccessful attempts decreased greatly for the group overall.

As indicated in Figure 5.5, the highest ratio of success was identified for S16, the caregiver of the youngest child participating in this study. This is a particularly positive finding in that it will become evident that this caregiver appeared to make little improvement in communication relative to the other caregivers. Considering the *age* of her child, success in gaining the child's visual attention is critical in that eye gaze is a

prerequisite for receiving communication in this context. It is also indicated in Figure 5.5 that S11 and S13 in particular, exhibited little change in terms of their ratio of success even though these caregivers became increasingly successful in gaining their children's attention relative to their unsuccessful attempts. Clearly S11 made good use of successful relative to unsuccessful attempts pre-intervention, whereas the ratio of success for S13 increased the least across the group of caregivers. An explanation for the latter may relate to the age of S13, being one of the two grandmothers participating in this study. Furthermore, Lederberg and Prezbindowski (2000) refer to AG strategies as *non-intuitive* to hearing caregivers of deaf children. Hence, S13's age and her natural use of particular strategies taught in the intervention programme may have contributed to the small increase in ratio of success of AG strategies.

- Eye Gaze patterns

Table 5.2: Descriptive Statistics for the Pre-Post-Intervention Change in Use of Eye Gaze Patterns

Eye Gaze Constituents	Difference			P-Value	
	Median	Minimum	Maximum	Difference	Log ratio
Caregiver to child	37	6	80	< 0.001	< 0.001
Mutual gaze	30	2	54	< 0.001	< 0.001
Caregiver to book	25	-2	67	< 0.001	< 0.001
Mutual gaze to book	21	-6	65	0.002	0.002
Caregiver to object	8	-18	47	0.151	0.151
Mutual gaze to object	5	-18	39	0.195	0.195

As indicated in Table 5.2, very marked numerical evidence for change was obtained on both the additive and multiplicative scales in terms of an increased occurrence of mutual gaze, caregiver gaze to the child and to the book/s, and mutual gaze to the book/s in storytelling episodes. These findings suggest increased joint attention, greater visual attunement as well as an increase in the length of storytelling episodes following the intervention.

Qualitative observations in addition to the findings on contingency in this study reveal the critical role of the caregivers' successful AG strategies and contingent communicative behaviours in bringing about joint focus during play and storytelling interactions. Hence, there was evidence of a sequential approach in interactions namely initial attempts at gaining the child's visual attention, that if successful led to joint attention such as mutual gaze, which in turn enabled some degree of communicative interaction. Similarly, Jamieson (1994) discusses a sequential visual process of communication that is a natural and effective strategy for deaf mothers of deaf children. It is through this process that both mother and child are able to mediate their understanding of the shared situation to each other, and the mediating tools may be for example, language and aspects of joint attention, such as mutual gaze (Jamieson, 1994). This situation reflects the concept of attunement. With regard to eye gaze and on the basis of the results of increased use thereof, it appears that the caregivers and their children became increasingly visually attuned to one another, as indicated by the categories of direction of gaze in Table 5.2.

Once again, the *age* of the child is a possible factor influencing the frequency of eye gaze patterns. For example, as indicated in Figure 5.2, the caregivers of the two youngest children (S3, S16) engaged in only a few more instances of mutual gaze post-intervention and the total occurrences of mutual gaze were few relative to those of the other dyads. As mentioned previously, the age of the child is likely to be related to the caregiver's ability to gain his/her attention successfully and consistently. Hence, younger children will engage in fewer instances of joint attention, which in this case refers to mutual gaze, with their communication partners than older children. Lederberg (2002) explains this situation according to child development in terms of ability to attend.

No numerical evidence for change in terms of caregiver gaze to objects and mutual gaze to objects was obtained on the basis of the Wilcoxon signed-rank test. That is, a consistent unidirectional change across the group of caregivers did not seem to occur for these two eye gaze patterns. Instances of decreased occurrence in gazing at objects may be attributed to the finding that following intervention, caregivers were *gazing far more at their children, engaging more frequently in joint attention and in storytelling episodes*

with books. Furthermore, fewer instances of gazing at objects relates to the qualitative observation recorded pre-intervention for many of the dyads, namely *minimal communicative interaction* between the caregivers and their children but *frequent gazing at and manipulation of objects in the context of play*.

Finally, the only caregiver who gazed less frequently at the book/s and engaged in fewer instances of mutual gaze to the book/s with her child was S5. As previously mentioned, possible explanations for this finding relate to *culture* and *education*.

- Use of meaning illocutions:

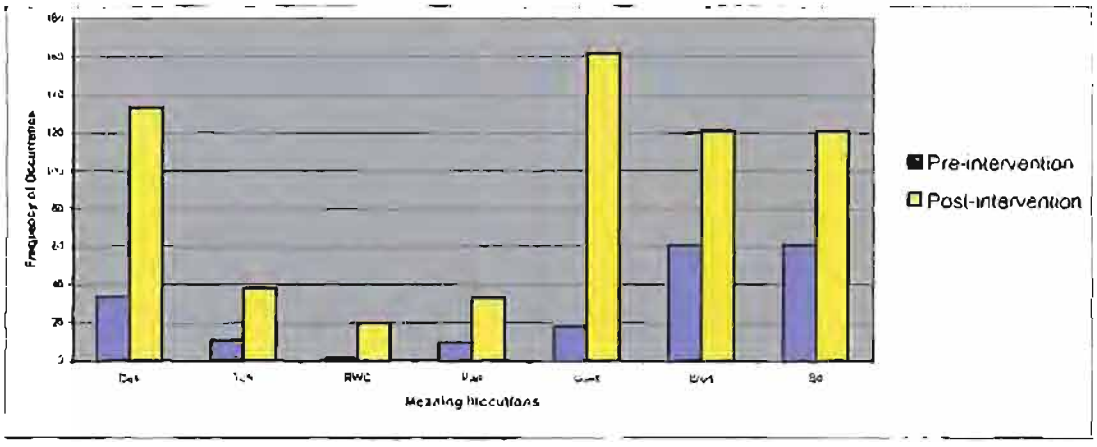
According to Conti-Ramsden (1990:264), **meaning illocutions** are those communication acts that "appear to function in conversation primarily to share meaning and information and to build and sustain relationships with people". Similarly, the use of language to transmit information is embedded in the discourse literature where **transaction** is viewed as an expression of content (Brown & Yule, 1983). The results of the meaning illocutions that reflect transaction under investigation in this study, namely assertives, requestives and directives, will now be presented.

Table 5.3: Descriptive Statistics for the Pre-Post-intervention Change in Use of Meaning Illocutions

Constituent Variables	Difference			P-Value	
	Median	Minimum	Maximum	Difference	Log ratio
Label	42	6	62	< 0.001	< 0.001
Descriptions	6	-2	16	< 0.001	0.02
Teach	2	-2	7	0.033	0.062
Pantomime	1	-2	6	0.011	0.125
Question	7	-4	29	< 0.001	0.016
Behaviour requests	3	-2	14	0.004	0.019
Behaviour directives	3	-2	14	0.004	0.019
Attention directives	24	9	45	< 0.001	< 0.001
Real world connection	0	-1	6	0.035	
Evaluation	0	-1	1	0.5	

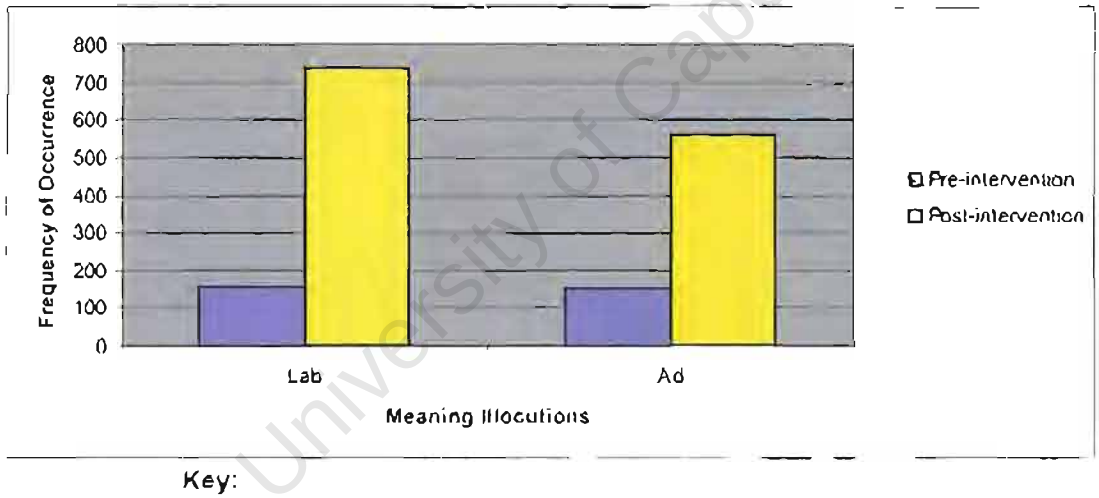
Table 5.3 indicates overall strong evidence for change in terms of the variety of meaning illocutions under investigation. The only variable for which numerical evidence was not obtained was that of evaluation, being caregiver utterances that express personal judgements/attitudes about a person, object or situation. Only three of the caregivers used this type of assertive device in interactions with their children.

Figures 5.6(a) and 5.6(b) indicate the sum of the frequencies across the group for each of the meaning illocutions that increased significantly over the course of the intervention. These illocutions are illustrated in two bar graphs (a) and (b) in view of the differing frequencies of occurrence.



Key:
Des=Description
Tch=Teach
RWC=Real World Connection
Pan=Pantomime
Ques=Questions
Breq=Behaviour Request
Bd=Behaviour Directive

Figure 5.6(a): Pre- and Post- Intervention Use of Meaning Illocutions



Key:
Lab = Label
Ad = Attention Directive

Figure 5.6(b): Pre- and Post- Intervention Use of Meaning Illocutions

As indicated in Figure 5.6(b), labelling was the most commonly used type of meaning illocution pre- and post- intervention, followed by the frequent use of strategies that served to direct the attention of the children. This finding strongly suggests that post-intervention, caregivers were far more aware of the importance of encouraging the lexical development for their children and of successful AG strategies. The category of labelling,

for the purposes of statistical analysis, included *spontaneous naming* (e.g. BALL), *descriptive labelling* (e.g. RED, UP) and *labelling by means of pointing* (e.g. YOU). Frequency data revealed the increased use of each form of labelling over the course of the intervention, contributing to both additive and multiplicative change for labelling devices.

Out of these three forms of labelling, the dominant form post-intervention as well as the form in which the greatest increase in use occurred across the caregivers, was *spontaneous naming*. Lederberg (2002) summarizes research findings on the types of words that children learn in relation to the size of the children's lexicon. Early words typically include nominals or names of objects and people, regardless of hearing status. For the deaf child, of hearing or deaf parents, acquiring Sign Language, signed or spoken English, and whose lexicon is larger than 50 and even 100 words, this lexicon is likely to contain more action, descriptive and personal-social words than nominals. This finding is reported relative to hearing children at the same level of lexical development (Lederberg, 2002).

The predominant use of names (e.g. for objects, pictures in the book/s and people) by the caregivers was to be expected in view of the nature of the intervention programme and those participating in the intervention. The programme was a short-term intervention for caregivers who have received no prior formal intervention in sign language communication that is appropriate for use with their pre-school aged Deaf children.

Even though the use of *descriptive labelling* increased overall over the 12-week period, the greater use of more simple forms of labelling suggests the need for further training in sign language in order to encourage further the use of descriptive labelling. Moreover, descriptive labelling increased more than labelling by means of pointing which relates to spatial aspects of sign language. The use of *point labelling* primarily took the form of personal pronouns to label the caregiver or child or character in the book. Additional sign language vocabulary and information on the spatial aspects of sign language are felt to warrant attention in more long-term intervention.

In this short-term intervention however, different roles of pointing were acknowledged in view of the importance of pointing in sign language. The use of pronominals is discussed in section **5.5.3** below yet it is necessary at this stage to highlight the approach to investigating the use of pointing in this study. Personal pronouns were coded as point labels in the coding system, while demonstrative pronouns were coded as such as well as according to their additional role as either an AG device or in point turn-taking episodes. These additional roles constituted the regulative and contingency devices as part of the coding system.

As indicated in Table 5.3, marked additive and multiplicative change in the use of **descriptions** by the caregivers further reflects the greater use of meaning illocutions in interactions with their children. Descriptive utterances of events, properties, locations, and possessions of objects or people, and the use of suggestions in the interactions constituted the category of descriptions in this study. Clearly, greater linguistic and lexical demand is likely to be inherent in these utterances in comparison to naming and descriptive labelling. In most cases, naming and/or descriptive labelling and/or point labelling occurred within a description (e.g. S11: ME DRINK TEA).

The coding system compiled in this study enabled an examination of mode use. Post-intervention, all forms of labelling and descriptions were predominantly used in the mode of sign language. An increased use of these meaning illocutions in sign is a particularly positive finding in view of the nature of the intervention programme that addressed facilitative communication strategies through sign language. The greater use of signs by the caregivers indicates their wider signing vocabulary and suggests a greater ease in the use of sign language.

As indicated in Figure 5.6(b) and Table 5.3 above, not only were **attention directives** commonly used pre- and post- intervention, but evidence of a significant increase in their use was obtained for additive and multiplicative types of change. Since the variety of successful AG strategies used by the caregivers constituted the variable of attention directives in this study, a similar interpretation of the findings on the various strategies to that presented above applies to attention directives. As part of meaning illocutions

however, the extent of change over time reflects the caregivers' successful attempts at directing their children's attention.

Similarly, **behaviour requests** in this study constituted the variable of **behaviour directives**. As indicated in Figure 5.6(a), these two types of meaning illocutions increased post-intervention. An increase in use over the course of the intervention of particular communicative acts (e.g. repetition) may well have enhanced the caregiver-child interactions whereas some degree of increased use of other acts (e.g. behaviour requests) may have hindered the overall nature of interactions. Directiveness and control have typically been interpreted from a negative perspective in the literature (Conti-Ramsden, 1994; Galloway & Woll, 1994). The prevailing view in the field of Hd interaction is as follows. Deaf children may be suffering the secondary disability of controlling, discouraging, and negative interactions with their mothers, who provide a less facilitative environment for language acquisition and for social and cognitive development (Galloway & Woll, 1994 in Lederberg & Prezbindowski, 2000).

However, Galloway and Woll (1994) and Lederberg and Prezbindowski (2000) caution people from accepting this conclusion. The latter researchers found that even without intervention, child deafness does not seem to have a general negative impact on the mother-child social relationship in areas including attachment, quality of maternal affective behaviour, and maternal control. Negative interactions may be specific to certain samples and limited to subsets of Hd dyads (Lederberg & Prezbindowski, 2000).

In this study, directive communicative acts were defined functionally in terms of the behaviour and attention of the children. Consequently, characteristics of caregivers' communicative acts that may enhance versus limit the effectiveness of the interaction and the communication development of the children could be examined. However, such examination was possible only to a certain extent. Since attention and behaviour directives in eliciting specific responses from the children were under investigation, rather than a broader set of directive parameters and/or other methodological procedures, conclusive evidence regarding a possible overly directive communication style of the

caregivers could not be provided here. An emphasis was placed upon caregiver use of language and communication rather than upon overall interactional style.

Furthermore, since AG strategies constituted the category of attention directives and since the increased use of these strategies has positive implications in this study, attention directives as a category cannot contribute towards evidence of strategies that limit child language and communication development. In agreement with Duchan (1989) attention-getting devices used within the context of engaging in interaction that ultimately facilitate child development, offer a necessary condition for the activity to be successful. Finally, the occurrence of attention directives and behaviour directives reported in this section were those that did not constitute breakdown in the dyadic interactions. It is thus felt that the majority, if not all, of the behaviour directives formed part of the conversational interaction. Since some controversies exist regarding so-called 'directive' communicative acts, results are presented on the use of attention- and behaviour- directives per caregiver pre- and post- intervention (See Figure 5.7).

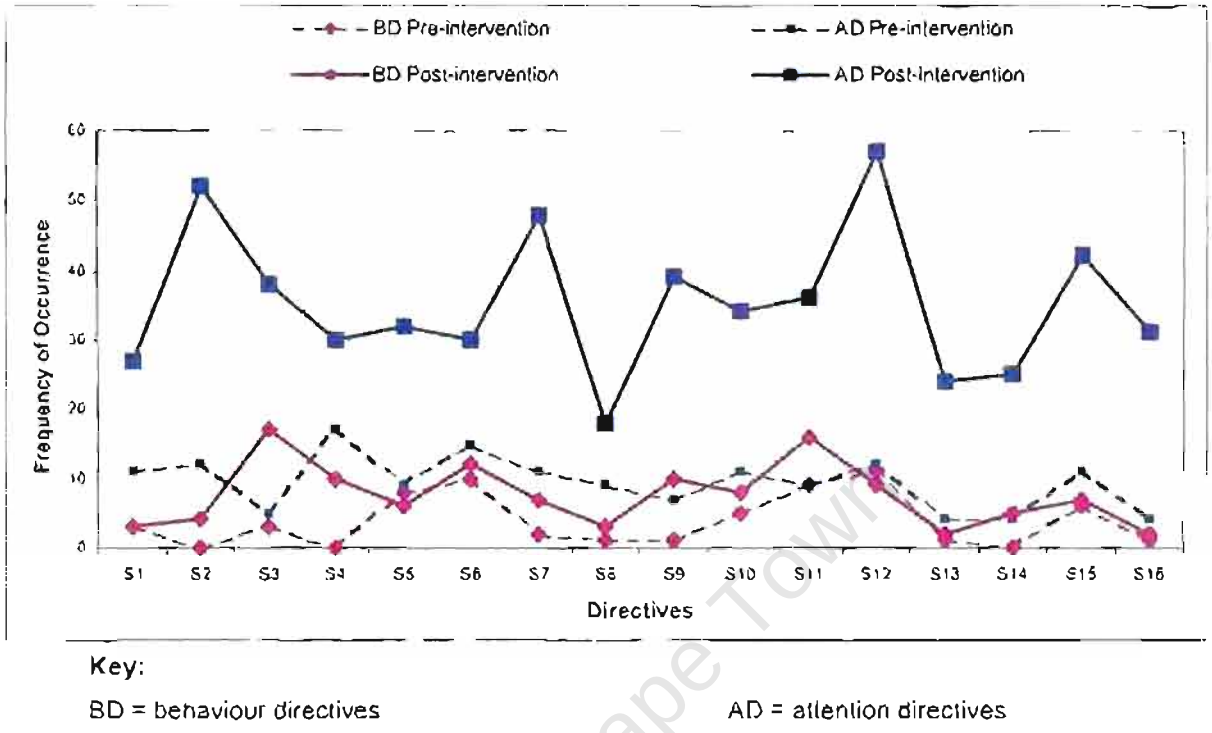


Figure 5.7: Individual Use of Directives Pre- and Post- Intervention

Figure 5.7 reveals the far greater frequency of attention- than behaviour- directives employed across the group both pre- and post- intervention. In addition, the descriptive statistics presented in Table 5.3 indicate the evidence of a greater increase in use of attention than of behaviour directives.

In the main, the relatively low frequency of occurrence of behaviour directives in addition to qualitative observations of the dyadic interactions, suggest that the use of attention and behaviour directives post-intervention did not indicate a sense of overly controlling, didactic interaction patterns. Such patterns have been commonly reported in the literature of hearing parents and their young deaf children (see Newton, 1985). It is felt that the language addressed to the children in this study, as indicated by the quantitative and qualitative findings on communicative interaction, did not reflect a directive style that is typically documented (see Connard & Kantor, 1988). Rather, an interactional, conversational style was observed that strongly suggests a positive influence on the children's language-learning process.

As previously mentioned, statistical analysis procedures were carried out in order to determine evidence for change relating to increased use of communication parameters that did not constitute breakdown. Increased rather than decreased occurrence of directives in this study was interpreted as positive change in view of the absence of assumptions of 'normality', of the frequency of occurrence and of qualitative observations.

Tannock (1988 in Lederberg & Prezbindowski, 2000) proposed that one way in which mothers may control interactions with their children is that of response control, in which the mother has a tendency to use commands, questions and other behaviour to elicit a response from the child. S6 used the greatest number of questions and attention directives across the group of subjects post-intervention. However, the use of questioning and regular attempts to gain the child's attention successfully may be viewed in a positive light rather than from an overly directive perspective. Additional evidence opposing disproportionate control in the interactions is that of the frequency of use of behaviour directives. For example, S6 in fact used fewer behaviour directives post- as opposed to pre- intervention and a frequency of use that amounted to half of the highest use across the group, as indicated in Figure 5.7.

Excessive use of imperatives has been found to negatively influence the child's language-learning progress (Duchan, 1989) According to Lederberg and Prezbindowski (2000) hearing mothers of deaf children appear to make an intuitive adaptation to their children's level of linguistic competence by being more directive in terms of the use of response controls. Research on the impact of response controls on language development is however contradictory. Even though mothers of deaf toddlers generally make use of more response controls than mothers of hearing toddlers, this may not have a negative impact on deaf children's development (Lederberg & Prezbindowski, 2000). Galloway and Woll (1994) argue that whether frequent use of imperatives has detrimental effects on a deaf child's language development can only be established on the basis of reliable longitudinal evidence.

As indicated in Figure 5.7 the caregivers of the younger children (e.g. S3, S16) considered age-appropriate communication in that they employed few behaviour directives. An exception however was S1 for whom qualitative notes indicated low levels of cooperation by her son during storytelling post-intervention. It is assumed that this caregiver made frequent use of attention and behaviour directives in response to her child's cooperation. Pre- intervention however, S1 did not appear to persist in directing her son's attention or behaviour to the book/s.

The relatively large occurrence of behaviour directives used by S5, is likely to relate to this grandmother's overall little improvement in communicating with her grandson, relative to the remainder of the group. Some researchers have suggested that the use of response controls is a reaction to a sense of powerlessness (Schlesinger, 1985 in Lederberg & Prezbindowski, 2000).

With regard to mode use, sign language was the dominant mode used to request, and thus direct, the behaviour of the children, constituting 77% of the total behaviour directives post-intervention as opposed to 52% pre-intervention. In addition to sign, a greater reliance on sign and non-manual features was evident post-intervention in directing the children's behaviours. This situation contrasted the situation pre-intervention in which gesture was used by several caregivers. Greenberg, Calderon and Kusche (1984) refer to the use of gesturing in commanding behaviour, as a basic type of communication act. Overall mode use in behaviour directives reflected the wider sign vocabulary of the caregivers following intervention.

Some researchers have questioned the appropriateness of coding questions as directives and assumptions that use of direct questions is detrimental to conversation. The use of questions may have functional value in eliciting communication from children with developmental disabilities (Yoder & Davies, 1990). In view of contradictions in the literature regarding the facilitative versus detrimental/directive role of questions, question types including both choice and product questions constituted requestive functions in the present coding system.

The strong evidence for additive and multiplicative change (see Table 5.3) suggests overall for example, that the caregivers attempted to initiate an increased number of turns from their children following the intervention. Qualitative observations revealed that questions were more commonly used during the storytelling interactions than in the play interactions. Possible explanations for this finding include evidence of the attempts to engage the children in joint storytelling episodes, and assessing the children's knowledge of the pictures and the story

Lartz (1993) lists a number of positive findings in the literature primarily of hearing mother-child dyads regarding the use of questions. For example, questions have been found to be positively associated with language development, are likely to function as a critical language teaching element between mother and child, may increase turn-taking episodes on a shared topic, and may contribute to cognitive development in that they facilitate learning in particular situations (Lartz, 1993).

A greater number of Wh- questions than choice questions were used overall both pre- and post- intervention Greater use of questions that seek information as opposed to those that require an either-or type of response, suggests that caregivers allowed for a greater variety of responses to their questions and encouraging multi- rather than single- word responses, thereby encouraging the opportunity for turn-taking contingency. Certain initiations, such as direct questions, provide the impetus for a further utterance while other initiations may need a great deal of processing by the communication partner in identifying how a response can lead to a further comment (Smith & Leinonen, 1992).

Requests for information have been found to occur more frequently with older children than with younger children (Rogers-Warren, Nelson & Blair, 1985 in Lartz, 1993). A positive finding relating to the use of communication strategies appropriate to the *age* of the child was identified in the use of questions. The caregivers of the two youngest children in the study (S3, S16) used very few questions post-intervention in comparison to the other caregivers. This finding provides evidence suggesting the post-intervention awareness of these two caregivers regarding the language stimulation needs of the very young child. The different training needs across the group of caregivers according to the

age of the children were acknowledged. Caregivers were informed of some of the differences in terms of age-appropriate use of strategies and techniques. These differences, one of which included questioning, were modelled for the caregivers and activities for application were carried out.

Further possible reasons for some of the caregivers using more questions than others may relate to the *personality characteristics* of the caregivers. On the basis of the relationship established between the researcher and the caregivers over the course of the intervention, it is inferred that the more confident caregivers employed a greater number of questions. In addition, large increases among the caregivers may partly reflect the *caregivers' efforts to reveal the larger sign language vocabulary of their children*. Notwithstanding, an attitude of overly directing the interactions by means of a dominating use of questions was not evident among the caregivers.

Prior to intervention, the few questions that were posed to the children were primarily expressed in the sign modality. Following the intervention, the combination of sign language and non-manual features was the dominant mode used in the formation of product and choice questions. Caregivers generally made good use of non-manual features in the formation of their questions overall. Sign language alone was the next most commonly used mode to convey product questions following the intervention. The caregivers' mode use is a positive finding in view of the large extent to which deaf individuals rely upon facial cues in their interactions (Rea et al, 1988). The photographs in Figure **5.8** illustrate the use of non-manual features in question formation during storytelling interactions.

S8 WHERE

S+1 WHERE

Figure 5.8: Demonstration of the use of appropriate non-manual features in question formation

Although not used as frequently as many of the other meaning dimensions, as indicated in Figure 5.6(c), strong numerical evidence for additive change was obtained for the categories of **teach, pantomime** and **real world connection**. The use of teaching strategies refers to those that are commonly employed by deaf mothers with their deaf children and some of which were described and modelled during the programme. The significant increase suggests greater confidence among the caregivers overall in their interactions with their children who rely upon communication through sign language. In

particular, teaching of signs either by means of manipulating the child's hand to produce the sign or providing the correct production following the child's error were the commonly used teaching strategies post intervention (See Figure 5.9). One of the caregivers of the younger children in the group (S1) made frequent use of signing in her son's usual local. These teaching strategies have been reported in deaf mother-deaf child interactions (see Swisher, 1991; Erting et al., 1987).

S9 manipulating her child's hand to produce YELLOW

S6 teaching her child correct production of NOTHING

Figure 5.9: Demonstration of teaching strategies used by caregivers

Similarly, the use of pantomime as a meaningful type of visual communicative act was modelled during the programme, yet was not highlighted as one of the critical communication behaviours in the programme for caregivers that have had no previous exposure to intervention. The act of pantomime may be regarded as a more advanced aspect of communication since it involves descriptive gesture that incorporates body movement and posture.

In light of the nature of real world connection, overall increased use thereof suggests additional use of a teaching perspective of the caregivers in interactions with their children. Real world connections primarily between pictures in the storybooks and the immediate communication environment were used. Connections between the book and the child's real life experience were found to be used infrequently by deaf mothers interacting with their deaf children aged three to five years (Lartz & Lestina, 1995).

- Use of cohesion illocutions:

As was the case for meaning illocutions, strong evidence overall for change over the course of the intervention was obtained regarding the variety of cohesion illocutions under investigation. Table 5.4 presents the descriptive statistics for pre-post-intervention change.

Table 5.4: Descriptive Statistics for the Pre-Post-intervention Change in Use of Cohesion Illocutions

Constituent Variables	Difference			P-Value	
	Median	Minimum	Maximum	Difference	Log ratio
Answer to question	1	0	8	0.002	0.5
Acknowledgement/praise	18	2	38	< 0.001	< 0.001
Repetition	21	1	55	< 0.001	< 0.001
Attention-getting	24	9	45	< 0.001	< 0.001
Turn-taking contingency	196	28	354	< 0.001	< 0.001
Point turn-taking	2	-4	11	0.011	0.312

According to Conti-Ramsden (1990:264) cohesion illocutions are those communication acts that "appear to function mainly to respond to the conversational partner as well as to maintain conversational flow and discourse cohesion". Evidently, meaning illocutions for the purposes of transaction differ from **cohesion illocutions** that apply to the dynamics of communicative behaviours that are meaningful in the context of **interaction**. An emphasis was placed on the roles of the devices of cohesion illocutions as responses to the child's or the caregiver's own preceding actions or utterances, rather than as an isolated contribution that may serve as a language or communication stimulation technique.

The numerical evidence for change as indicated in Table 5.4 suggests that post-intervention, the caregivers were:

- adequately responsive to questions,
- adequately responsive to utterances and actions of their children through the use of acknowledgement/praise,
- able to regulate the interactions adequately by means of AG strategies and repetition, and
- contingent in their utterances, actions and eye gaze.

Moreover, increased use of cohesion illocutions suggests that the children actively participated in the post-intervention interactions to a greater extent than that identified pre-intervention.

For the purposes of statistical analysis, the occurrences of **choice and product answers** were combined, as were the occurrences of different forms of AG strategies used in the interactions. The greater use of caregiver responses to their own and their children's questions indicates contingency in interaction as well as reflecting the overall increase in use of questions. Qualitative observations that were recorded post-intervention reveal the greater number of questions asked and answered by some of the caregivers than those answered by the caregivers in response to questions asked by the children. This finding is congruent with the report of Lederberg (2002) that question-asking by deaf toddlers and preschoolers of hearing parents remains at a low level. The pragmatic function of these and hearing children's communication, particularly question-asking, is related to their

language abilities (Greenberg, 1980 and Nicholas, 2000 in Lederberg, 2002). Even though nonverbal communication can be used to make requests and call attention to the environment, information exchange, through for example comments and question-asking, is clearly linked to the production and use of language (Lederberg, 2002). It is thus argued in this study that hearing caregivers need training and support in pre-linguistic communication as well as in language strategies and techniques for the purposes of transaction and interaction. This notion is developed further in section 5.3 on the relationship between the four composite variables under investigation.

Caregivers' responsives to their own questions were coded as recasts of the caregivers' own preceding utterance. Further findings regarding the various contingency subcategories, including recasts, are discussed below in section 5.5.1. Sign language was the dominant mode used to answer questions post-intervention, constituting 84% of the total answers.

The descriptive statistics in Table 5.4 indicate the greater use of **repetition** than **acknowledgements and praise** following the intervention. In contrast, acknowledgement/praise was used more frequently than repetition prior to the intervention. Qualitative observations recorded pre-intervention indicate the seemingly great ease with which some of the caregivers nodded and/or smiled in response to their children's communicative acts.

The dominant mode used in acknowledgements and praise was that of non-manual features, primarily affective forms, both pre- and post- intervention. This finding is in line with the statement made by Rea et al (1988) that mothers, regardless of hearing status, may already employ a high frequency of exaggerated facial expressions in their interactions. Non-manual features in combination with sign, was the next most commonly used mode pre- and post- intervention. As in the delivery of questions post-intervention, caregivers made good use of non-manual features in acknowledgements/praise in their interactions with their children who rely upon visual-gestural communication. A variety of modes and mode combinations were employed to convey repetitions post-intervention, yet the most commonly used mode was that of sign

language followed by the use of non-manual and sign. Pre-post-intervention comparison of mode used suggests that the caregivers were making concerted efforts following intervention to incorporate language stimulation and contingency parameters through the medium of sign language with their children.

It is felt that the use of acknowledgement and praise is one of the more natural or *intuitive* communication behaviours of parents. Similarly, Lederberg (2002) reported that hearing mothers might intuitively make appropriate structural modifications (e.g. use of repetition) to their language with their deaf children. Increased use of repetition in this study then suggests a positive awareness of using repetition in language stimulation. Other communicative behaviours however (e.g. modifications that serve an attention-getting purpose), may *not be intuitive* (Lederberg, 2002). Perhaps this notion explains why language is not as visually accessible to deaf children of hearing parents as it is to those children of deaf parents (Harris, 2001 in Lederberg, 2002).

In agreement with Lederberg and Prezbindowski (2000) and on the basis of the findings of this study, caregivers need training and support in intuitive parenting behaviours, as well as training in less intuitive behaviours in order to enhance communicative interactions with their young deaf children who rely on a visual-gestural system.

The variety of successful **AG strategies** relates to cohesion in that they serve as a regulative device, maintaining conversational flow and contact between the caregivers and their children. The marked evidence for additive and multiplicative change (see Table 5.4), and the means of bringing about this change, indicate the enhanced ability of the caregivers to encourage and sustain conversational flow in turn-taking episodes through the use of sign language (including pointing), physical and visual/gestural means. The results reported thus far have indicated the benefits of training in less intuitive strategies, including gaining the deaf child's visual attention and making language visually accessible to and salient for the child.

With regard to turn-taking, all frequencies of occurrence recorded on the coding system contributed towards turn-taking and contingency and not communication breakdown.

Hence, each of these communication acts of the caregivers was incorporated in the category of **turn-taking contingency**. The particular role of the behaviour in turn-taking contingency was then examined. These roles or subcategories receive further mention in section 5.5.1. In addition to turn-taking contingency, **point turn-taking** was a contingency category in the coding system. As indicated in Table 5.4, strong numerical evidence for additive change was obtained for the use of point turn-taking.

The scope of turn-taking contingency in this study explains the large frequency counts recorded, as indicated in Table 5.4. In fact, the highest total frequency of occurrence across the constituents of attention, eye gaze, meaning and cohesion was obtained for the category of turn-taking contingency. Furthermore, the largest minimum difference (28) and maximum difference (354) across the group were obtained for this category in comparison with the other constituent variables under investigation. This finding is particularly meaningful in light of the overall strong evidence for change in terms of the use of all four composite variables and many of their constituent variables.

Turn-taking skills have been viewed as a prerequisite to language development, a process that children need to learn, and a process through which learning is facilitated (Wells, 1980 in Hornby, 1991). Of great importance in the communicative intervention programme in terms of turn-taking episodes, was contingent responsiveness by the caregivers to their own and especially to their children's actions and utterances. According to Girolametto et al (1986) the central role of the adult in facilitating interaction seems to be that of responsiveness to the child's cues. Language learning needs to occur in a warm and responsive environment in order to allow for optimal development (Lederberg & Prezbindowski, 2000).

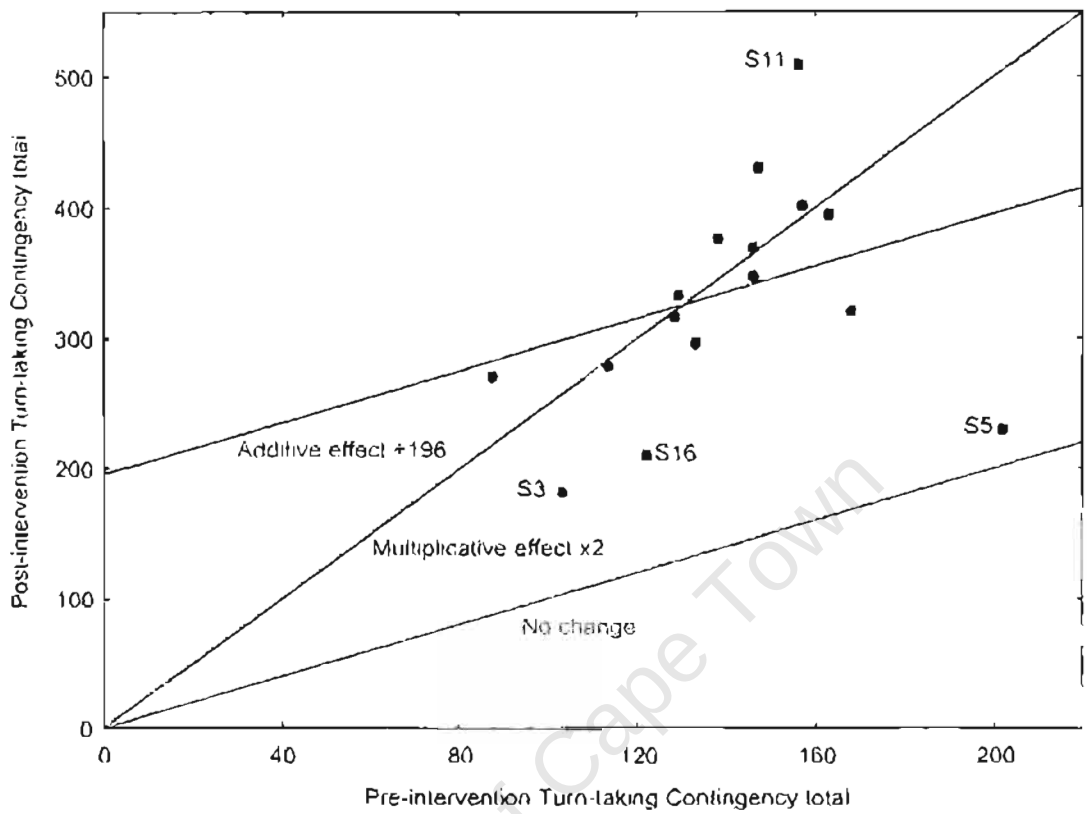


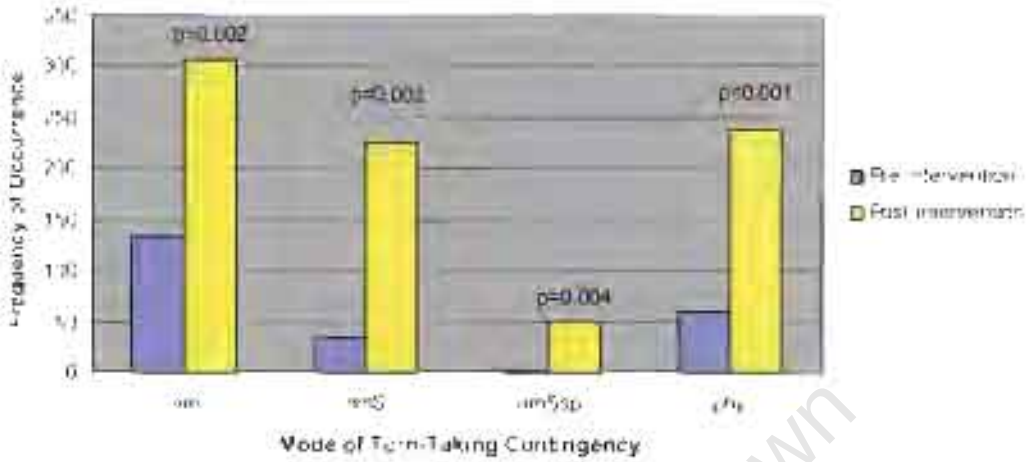
Figure 5.10: Pre-post-intervention Occurrence of Turn-taking Contingency

As depicted in Figure 5.10 the significant increase in use of turn-taking contingency was such that in general, the caregivers used an additional 196 (median difference) contingent actions, utterances and eye gaze patterns during turn-taking episodes post-intervention. A multiplicative effect of four times the occurrences pre- intervention was obtained. The intervention programme appears to have fostered a facilitative caregiver conversational style that, in turn, was effective in enabling a heightened amount of contingent responsiveness. Contingent responding encouraged in the programme included in particular, lexical, semantic and content relatedness to preceding utterances, and following the child's lead in activities through contingent gaze patterns, actions and utterances. Consistent responses or behaviours by an adult or object teach the child that communicative behaviours typically encourage a response, hence the notion that contingent responding contributes to the development of communication (Tiegerman &

Siperstein, 1984). Evidently, contingent responses contribute to longer turn-taking episodes and hence, reciprocity in turn-taking.

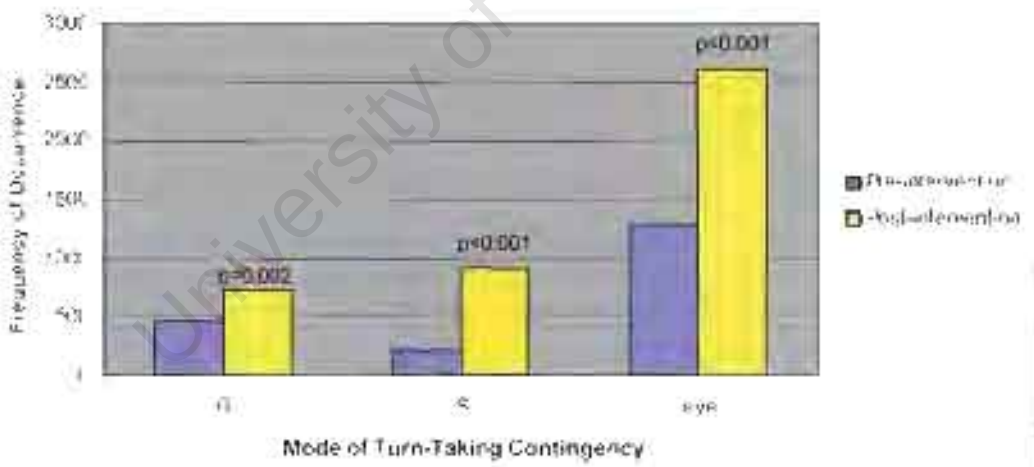
Once again, the caregivers of the two youngest children (S3, S16) and one of the grandmothers (S5) made use of the smallest increase across the group, which in this case was that of their use of turn-taking contingency, as depicted in Figure 5.10. Similarly, Girolametto (1988) identified a developmental trend in that mothers of pre-linguistic level children (with developmental delay) used the lowest levels of responsiveness, and as the children increased their responsiveness with age so too did the parents increase their responsiveness. Figure 5.10 also indicates that S11 employed the greatest amount of turn-taking contingency post-intervention and improved the greatest extent in this area over the course of the programme. The extent of improvement for S11 regarding her use of cohesion illocutions may thus be explained by this large increase in use of turn-taking contingency.

In view of the particular value of turn-taking contingency in this study, quantitative and qualitative findings that illustrate its use across different modes will now be presented. Figures **5.11(a)** and **(b)** illustrate the use of the particular modes that increased significantly over the course of the intervention. These modes are illustrated in two bar graphs (a) and (b) in view of the differing frequencies of occurrence.



Key:
nmSnonmanual + Sign
nmSspnonmanual + Sign + speech
Phyphysicalfacies

Figure 5.11(a): Mode Use in Turn-Taking Contingency



Key:
G=Gesture/Visual
S=Sign
eye=eye gaze

Figure 5.11(b): Mode Use in Turn-Taking Contingency

It is felt that the increased use of contingent responses (i.e. utterances, actions, eye gaze) by the caregivers to their children's communicative contributions as well as their increased success ratio of AG devices, suggests a willingness to engage their children in interaction. Qualitative notes indicated that in those instances in which the caregivers followed their children's lead, the consequence was joint focus of an activity. According to Girolametto et al (1986:372), this situation provides "a necessary framework for the give and take of dialogue" given that parents of the more passive communicators are able to reorganise the communicative environment appropriately.

As indicated in Figures 5.11(a) and (b), very marked numerical evidence of change was obtained on the additive and multiplicative scales for turn-taking contingency conveyed in **sign** language, in **eye gaze** patterns, in the **physical/tactile** mode, by means of **non-manual** features, and **gestural/visual** means (inclusive of caregiver actions that were relevant in the interactions). Furthermore, strong additive change was identified for turn-taking contingency that incorporated non-manual features, namely **nonmanual features and sign**, and **nonmanual features accompanying simultaneous sign and speech**. Statistical analysis indicated that the use of simultaneous sign and speech did not increase significantly over time.

These findings suggest the greater visual-gestural rather than the auditory orientation among the caregivers following their participation in the programme. It may be inferred that overall, the caregivers provided an increased accessibility of input for their Deaf children following intervention, given the extent of successful AG devices and communication mode use in contingency in interaction. The results have indicated that not only have the children been provided with more accessible input, but also with a larger quantity of input that reached significance (see composite variables).

The findings regarding mode use in contingency are particularly positive, especially when coupled with the finding that the caregivers engaged in more responsive interactions with the children, as indicated by the increased use of cohesion illocutions and moderate use of behaviour directives. In agreement with Mahoney et al (1998) a

critical determinant of intervention effectiveness is that parents are encouraged and supported to engage in highly responsive interactions with their children.

.....

As mentioned in Chapter Three, the areas of attention-getting, direction of eye gaze, and delivery of the communication message appear to represent the dimensions of greatest difference in the communicative behaviours of hearing and deaf mothers of young deaf children (Jamieson, 1994). The foregoing findings strongly suggest improvement across the group of caregivers in successfully gaining their children's attention and thereby enhancing visual attunement, in a heightened visual orientation to communication, and in the greater use of meaning and cohesion illocutions by means of sign language communication. It may be inferred that the use of effective AG strategies and contingent eye gaze patterns, as pre-linguistic skills, is critical in encouraging communication transaction and interaction, with an ultimate facilitative goal for the deaf child.

The following section of the results concerns the statistical evidence for particular constituent variables contributing more towards pre-post change than other variables.

5.2 CONTRIBUTORS TO CHANGE IN COMPOSITE VARIABLES

Since some of the constituent variables did not exhibit sufficient numerical evidence of change, stepwise regression was employed to explore which variables might matter most as contributors to the four composite variables (attention-getting, eye gaze, meaning, cohesion). In addition, contributors to change in turn-taking contingency, which formed a major part of cohesion illocutions, were explored.

The method of stepwise regression involves consideration of a composite total and selection of the component/constituent that is most strongly associated with that total, followed by selection of the next strongest, and so on. Stepwise regression thus seeks to explore which of the constituents are most necessary for the information that the composite contains. Essentially, an ordering of the importance of the contributor

variables is created as a means of explaining changes in the particular composite variable (Statistica 6.1). Since an explanation for change was sought, after-before differences were calculated and subjected to analysis.

The constituents of each of the composite variables may differ according to the particular research study and are thus motivated by a view of preference to insight. The ranking of constituents is irrelevant in the sense that stepwise regression focuses on composite totals rather than on the constituents themselves. The analysis does not contribute in itself to any other understanding of the constituents, so that it is perfectly legitimate for some of those constituents to be interpreted as important in their own right, aside from any role in the composite to which they are made to contribute by construction of that total (T. Dunne, personal communication, February 2003).

The tables in this section present the results of the stepwise regression analyses that explored which of the constituents are most necessary for the information that the particular composite contains. Squared multiple correlation coefficients (*R*-square), excluding and then including adjustment for the number of contributors already included, are tabulated. These *R*-square values climb steadily to their maximum value of 1.00, but a cut-off point between 1.00 and 0.95 can be subjectively chosen. The rationale is that minimal or no change in *R*-square indicates that the possible subsequent constituents do not warrant a place as a score in the analysis even though they did in fact contribute (T. Dunne, personal communication, February 2003). The small set of contributors selected in this way may be sufficient information on which to seek and describe evidence of change in this study.

The value of this analysis is such that if the same pattern were to be corroborated across more cases than the 16 of this study, there may be efficiencies to be obtained by collecting data on fewer variables – only those selected as useful in stepwise regression – without losing very much of the overall evidence for change.

The 'F to enter' values presented in the tables refer to a numerical assessment of whether there is sufficient evidence to select a constituent for entry into the subgroup of those that adequately reflect the composite (Statistica 6.1).

- Attention-getting Strategies

Table 5.5: Stepwise Regression results of After-Before Total Changes against After-Before Changes for Constituent Variables of Attention-Getting (AG) Strategies

Constituent Variables	Step	Multiple R	Multiple R-square	R-square change	F – to enter	p-level
Point AG	1	0.66	0.44	0.44	30.96	0.01
Nonmanual + Gestural AG	2	0.82	0.67	0.23	9.23	0.01
Physical AG	3	0.88	0.78	0.11	6.12	0.03
Gestural AG	4	0.99	0.98	0.2	108.36	0.00
Sign AG	5	1	1	0.02	55	0.00
Physical + Gestural AG	6	1	1	0		

The highlighted numbers in Table 5.5 for AG strategies serve to explain these particular results of the stepwise regression as an example that applies to all the stepwise regression results. The correlation between the pre-post difference in use of point attention-getting and difference in use of all successful AG strategies was 0.66 for which R-square is 0.44. Thus, 44% of the total variation is predictable from the variable of point attention-getting while 56% is related to other factors. The change in R-square of 0.44 indicates that point attention-getting contributed 44% towards the total change in use of AG strategies. The combined use of non-manual features and gestural means to gain the child's attention only contributed a further 23% to the total variability (change in R-square = 0.23), but together with point attention-getting, correlated highly (Multiple R = 0.82) with the total change in use of attention-getting. Furthermore, 67% (Multiple R-square) of the total variation can be predicted from variation in point attention-getting and nonmanual-

gestural AG strategies combined. Similarly, 78% of the total variation can be predicted on the basis of the contribution of point attention-getting, nonmanual-gestural, and physical AG strategies combined, as physical strategies contributed to a further 11% of variation. Together, the three selected variables have a multiple correlation of 0.88 with the total to which they contributed.

On the basis of the above-mentioned example regarding the meaning of the statistical output, the following findings were obtained, as indicated in Table 5.5. The change over the course of the intervention in use of point, nonmanual-gesture, physical, and gestural AG strategies appear to almost completely explain the change in the composite attention-getting value. Attention-getting by means of *sign language* or the *physical-gestural* combination seemed to contribute minimally towards overall change. This finding suggests that these two forms of AG strategies and other forms that may have been used by the caregivers but were not highlighted in the regression analysis did not warrant examination in this study.

- Eye Gaze Patterns

Table 5.6: Stepwise Regression results of After-Before Total Changes against After-Before Changes for Constituent Variables for Eye Gaze

Constituent Variables	Step	Multiple R	Multiple R-square	R-square change	F - to enter	p-level
Caregiver to child	1	0.90	0.81	0.81	60.25	0.00
Mutual gaze to object	2	0.94	0.88	0.07	7.30	0.02
Caregiver to book	3	0.98	0.96	0.08	21.46	0.00
Mutual gaze	4	0.99	0.99	0.03	32.01	0.00
Caregiver to object	5	1.00	1.00	0.01	14.82	0.00
Mutual gaze to book	6	1.00	1.00	0.00	120,553,971,782,046.00	0.00

Table 5.6 presents the stepwise regression results for the composite eye gaze. The pattern of caregiver gaze to child contributed 81% to the total variation of change in use of eye

gaze patterns. Four major contributors to change in the composite include caregiver gaze to child, mutual gaze to object, caregiver gaze to book, and mutual gaze. These contributions strongly suggest the greater visual orientation of the caregivers as well as increased joint attention during the interactions.

Evidence was not obtained for *caregiver gaze to object* or *mutual gaze to book* adequately predicting total variation. In further studies of subjects similar to this study group of 16, one might be tempted to dispense with these two constituent variables.

- Meaning Illocutions

Table 5.7: Stepwise Regression results of After-Before Total Changes against After-Before Changes for Constituent Variables for Meaning Illocutions

Constituent Variables	Step	Multiple R	Multiple R-square	R-square change	F – to enter	p-level
Label	1	0.85	0.72	0.72	35.99	0.00
Attention directives	2	0.94	0.88	0.16	18.38	0.00
Behaviour requests	3	0.96	0.92	0.03	5.16	0.04

On the basis of the stepwise regression analysis as presented in Table 5.7, labelling contributed 72% to the total variation in changes in use of meaning illocutions. Additional contributors, yet to a smaller extent, included attention directives and behaviour requests Even though behaviour requests constituted behaviour directives, the analysis did not indicate that the directive form contributed to the same extent as behaviour requests.

The dominant contribution to change by labelling (i.e. spontaneous naming, descriptive labelling, point labelling) reflects the use of language stimulation following intervention for the first time in language and communication strategies and techniques. The second greatest contributor to total variation in change (of 16%) in transaction techniques,

namely attention directives, indicates the acknowledged importance among caregivers of directing the child's attention in the play and storytelling interactions. The finding that 88% of the total variation in changes of meaning illocutions can be predicted from changes in labelling and attention directives combined, reflects the nature of the intervention programme as an elementary form of intervention for hearing caregivers and their young deaf children.

In spite of the evidence for significant increase post intervention in the use of *behaviour directives, questions, descriptions, teach, pantomime* and *real world connection*, evidence of contributing sufficiently to change in the composite value of meaning illocutions was not obtained. It is believed that each of these constituents is important in their own right on the basis of previous research in this field as well as their frequency of use by the caregivers in both a pilot study and the present study. The stepwise regression results suggest that the meaning illocutions composite may not be as adequate for summarizing changes in that realm as was previously anticipated.

- Cohesion Illocutions

Table 5.8: Stepwise Regression results of After-Before Total Changes against After-Before Changes for Constituent Variables for Cohesion Illocutions

Constituent Variables	Step	Multiple R	Multiple R-square	R-square change	F – to enter	p-level
Turn-taking contingency	1	0.99	0.97	0.97	542.45	0.00
Repetition	2	1.00	0.99	0.01	10.84	0.01
Attention-getting	3	1.00	1.00	0.01	24.06	0.00
Acknowledgement/praise	4	1.00	1.00	0.00	37.24	0.00
Point turn-taking	5	1.00	1.00	0.00	13.73	0.00
Answer to question	6	1.00	1.00	0.00		

A positive finding that is presented in Table **5.8** was that of the dominant contribution (of 97%) of turn-taking contingency to the total variation in change in cohesion illocutions.

Change in both turn-taking contingency and repetition appeared to almost completely explain the change in the composite cohesion illocutions value in that 99% of the total variation could be predicted from variation in these two constituent variables combined. Clearly, the importance of repetition in early communicative interaction cannot be disregarded.

Evidence of sufficient contribution to warrant examination was not obtained for *attention-getting, acknowledgement/praise, point turn-taking* and *responses to questions.* It may then be suggested that these variables may be disregarded if a composite index is regarded as adequate. It may be inferred that attention-getting be included as a constituent of meaning illocutions rather than of both meaning and cohesion composites. The grounds for these inferences include the critical role of attention-getting devices in interaction with deaf individuals, and the regression results obtained for the composites of meaning and cohesion illocutions with regard to attention-getting.

The major contributors to change in turn-taking contingency are highlighted in Table 5.9 on the following page. Clearly, eye gaze dominated in total variation of turn-taking contingency. This finding suggests the critical role of a visual orientation in communicating with deaf individuals. Gaze functions not only as a channel for receiving information but also as a signal in turn-taking (Swisher, 1991).

Table 5.9: Stepwise Regression results of After-Before Changes for Turn-taking Contingency against After-Before Changes for Turn-taking Contingency (ttc) Constituent Variables

Constituent Variables	Step	Multiple R	Multiple R-square	R-square change	F – to enter	p-level
Eye gaze ttc	1	0.96	0.91	0.91	146.13	0.00
Nonmanual + speech ttc	2	0.98	0.96	0.05	18.84	0.00
Gestural-sign-nonmanual ttc	3	0.99	0.98	0.01	5.52	0.04
Sign ttc	4	0.99	0.98	0.01	3.72	0.08
Nonmanual-sign ttc	5	0.99	0.99	0.01	4.28	0.07
Nonmanual-sign-speech ttc	6	1.00	0.99	0.00	2.67	0.14
Nonmanual ttc	7	1.00	0.99	0.00	4.82	0.06
Physical ttc	8	1.00	1.00	0.00	1.64	0.24
Gestural ttc	9	1.00	1.00	0.00	5.45	0.06
Sign-speech ttc	10	1.00	1.00	0.00	26.51	0.00
Gestural-physical ttc	11	1.00	1.00	0.00	9.84	0.03
Gestural-sign ttc	12	1.00	1.00	0.00	1.14	0.36

5.3 RELATIONSHIP BETWEEN THE FOUR COMPOSITE VARIABLES BASED UPON EVIDENCE OF CHANGE

In this study, the composite measures of meaning illocutions and of cohesion illocutions may be viewed as outcome variables, and the composite measures of AG strategies and of eye gaze patterns may be viewed as input variables since these constitute important pre-linguistic skills in communicative transaction and interaction. This hypothesis amounts to a claim that the four *composite variables may be associated* and that *changes in occurrence* of AG strategies and eye gaze *may be associated* with changes in occurrence of meaning illocutions and cohesion illocutions. Furthermore, these potential input and output variables may be *causally related* in that increased use of successful AG strategies and of eye gaze patterns may give rise to greater meaning illocutions

(transaction) and cohesion illocutions (interaction). In order to investigate these claims, the difference scores and logarithm ratios for the four composite variables were subjected to a correlation analysis and stepwise regression.

5.3.1 Correlation Analysis

The correlation matrix for the four composite variables reports only strengths of the pair-wise association. The matrix of Pearson correlations could have been employed, but since it was not clear as to whether these four composite variables were linearly related to one another, a more general measure of association was preferred. Spearman's rank correlation is a measure of the monotonic relationship between variables, and is a Pearson correlation of the ranks of the variables rather than of the original values of the variables (Howell, 1989). This robust measure of association was applied to the pre-post differences and to the logarithm ratio data. Pearson's correlation coefficient was determined for use in scatter diagrams since the original values of the particular variables were used rather than the ranks. **Appendix 8** presents the findings on the basis of the matrices for the differences and ratio data and on the basis of the correlation coefficient

On the basis of both of the above-mentioned sets of correlation outputs (see Appendix 8) it can be inferred that attention and eye gaze changes are associated with changes in cohesion directly, and with changes in meaning both directly and as mediated through cohesion changes. This interpretation was checked for coherence with the data by carrying out stepwise regression analyses focusing on the four composite variables themselves. In particular, an analysis of the three explanatory variables for the response variable meaning illocutions served to explain the inferences made on the basis of the correlation analyses The results of these stepwise regression analyses will now be addressed.

5.3.2 Stepwise Regression Analyses that explored the Relationship between the Four Composite Variables

Five stepwise regression analyses were undertaken:

(i) and (ii): Two of the analyses were carried out in view of the established correlation between meaning and cohesion illocutions. Meaning illocutions was excluded as a possible contributor to change in cohesion illocutions and vice versa.

(iii) and (iv): Two of the analyses allowed for all possible contributors to change in meaning and cohesion illocutions.

(v): The major contributor to change in meaning and cohesion as a whole as output variables was examined.

The results indicating additive change are the focus in this section, rather than the results for both additive and multiplicative change. In this way, redundancy was avoided since equivalent effects were obtained for both types of change.

See **Appendix 9(a)** for the results of analyses (i) and (ii). In sum, the composite variable of attention-getting was identified as a major contributor of **meaning illocutions change** while eye gaze was a major contributor of **cohesion illocutions change**. This applies when the contributor link between meaning and cohesion illocutions is excluded.

This contributor link was not excluded in analyses (iii) and (iv). See **Appendix 9(b)** for the results of these analyses. In sum, it was identified in analysis (iii) that cohesion rather than attention-getting dominated **meaning change** and that cohesion change was associated with underlying changes in attention and eye gaze. This latter finding suggests the importance of caregiver support and training in pre-linguistic skills and in aspects of interaction in first-time intervention programmes.

Analysis (iii) thus provides statistical evidence of cohesion illocutions being primarily associated with changes in meaning illocutions. An emphasis was placed on contingency

and interaction in the intervention programme. Moreover, the programme was a short-term intervention compiled for those with no previous exposure to formal communicative intervention. The need then was to support and train the caregivers in basic language stimulation and communication techniques in addition to sign language. Cohesion illocutions changes dominating meaning illocutions changes, above eye gaze and attention-getting, suggests the need for an expanded sign language vocabulary among the caregivers.

One fair interpretation of the observed data may be that in addressing and achieving changes in attention-getting and eye gaze, it is possible to give rise to changes in cohesion, and hence to changes in meaning. This interpretation is open to critique if there were other factors or important intervening variables operating in the study that were not necessarily observable. An inference of *causality* from these observations is one that is tentative and responsible, but not beyond dispute.

Arguments for this causal view might have been stronger had it been ethically and financially possible to simultaneously observe a comparable control group. Had such a group exhibited no change or clearly lower levels of change, the argument for the intervention as the causal agent of improvement would be clearer. Had such a group exhibited equivalent changes, one might infer that it is simply the passage of time that is associated with change, rather than causal phenomena. Since pre-post-intervention change in this study was measurable and observable, and the information, the support and training in various communication behaviours provided to the caregivers have been described, it may be inferred that there is a strong possibility that the communicative intervention programme contributed to bringing about the change.

Analysis (iv) indicated that change in eye gaze dominated additive **cohesion change** while change in meaning illocutions dominated multiplicative cohesion change (see **Appendix 9(b)**). Figure **5.12** indicates the strong association obtained on the basis of Pearson's correlation coefficient, between changes in eye gaze and meaning illocutions and cohesion illocutions. The strongest prediction of cohesion change was the combination of eye gaze and meaning illocutions change (R-square = 0.8), as indicated in

Figure 5.12. This finding was to be expected in that visual attention is a prerequisite for sign language communicative interaction that is enhanced by transaction.

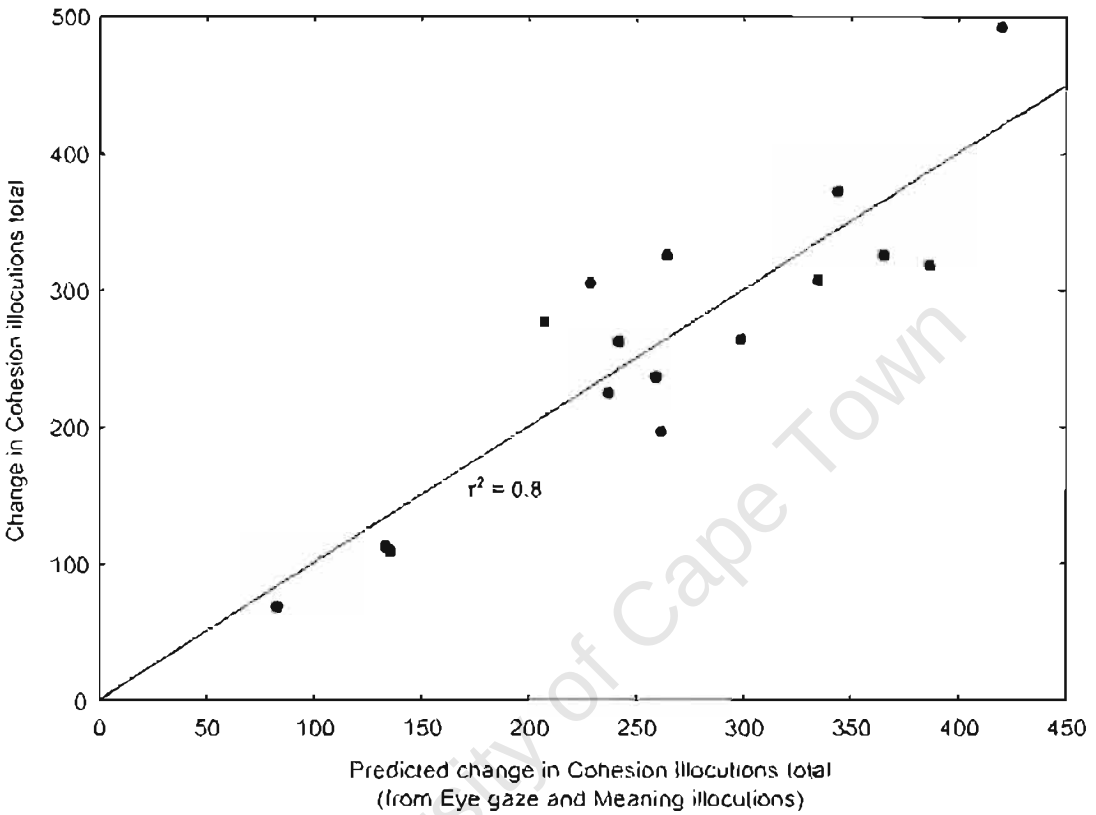


Figure 5.12: Scatter Diagram of Change in Cohesion Illocutions Predicted from Change in both Eye Gaze and Meaning Illocutions Combined

Analysis (v) indicated the dominating effect of eye gaze change over time in the combined difference values for meaning and cohesion illocutions (see Appendix 9(c)).

Figure 5.13 depicts the contribution of eye gaze to meaning and cohesion illocutions combined on the basis of Pearson's correlation coefficient. Clearly, changes in eye gaze contributed 70% to the overall changes in meaning and cohesion illocutions post-intervention. On this basis, one may infer that the combination of meaning and cohesion

illocutions somehow hides any linear effects associated with attention-getting, at least when eye gaze is already selected as an explanatory variable.

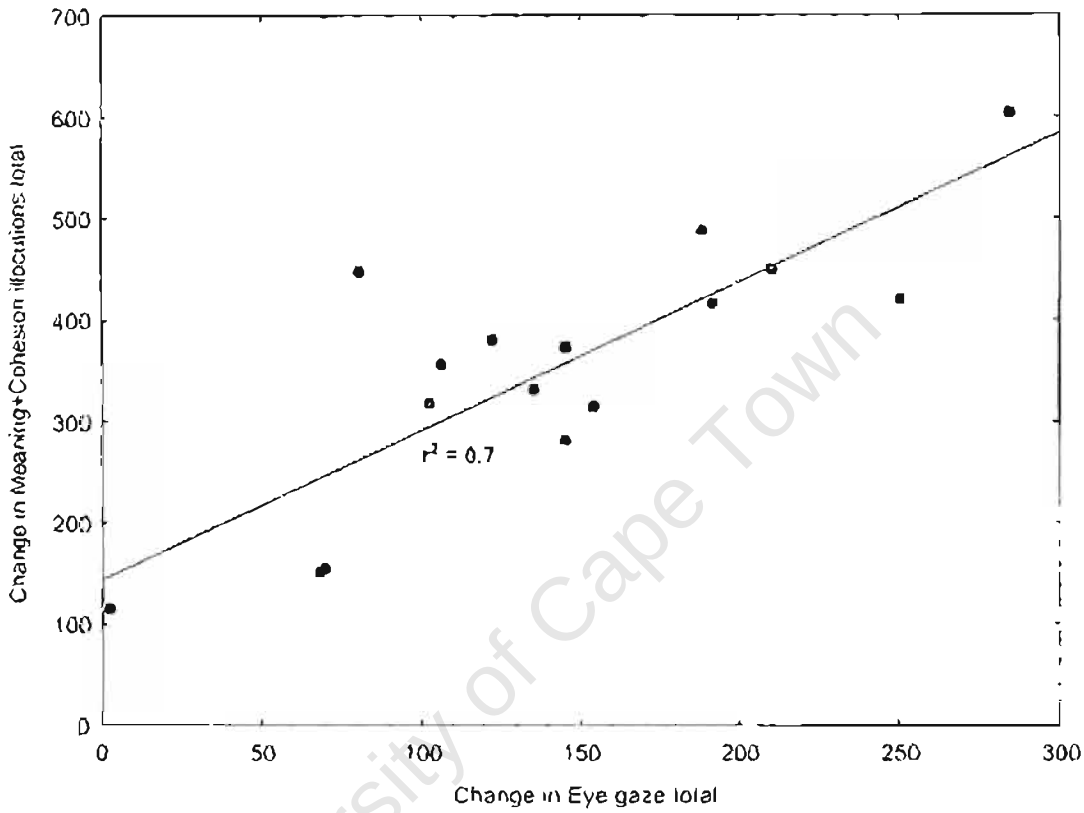


Figure 5.13: Scatter Diagram of the Association between Change in Eye Gaze and Change in both Meaning and Cohesion Illocutions Combined

5.4 SUMMARY OF STATISTICAL RESULTS

The analyses carried out in this study ultimately sought to answer two questions, one regarding **communication strategies** that are effective for achieving a particular learning outcome, and one regarding the **relationship/s** that exist/s between the **communication strategies.**

Overall, the statistical results presented and discussed to this point in this chapter suggest improvements in communicative transaction and interaction For example, increased use of all of the four composite variables and the majority of the constituent variables, across the group, was identified. A common unidirectional change can thus be inferred, providing numerical evidence of change over the course of the intervention. A particularly important outcome identified was that the children had greater access post- as opposed to pre- intervention to a visual-gestural system of communication in which an appropriate language model is provided. In addition to making use of intuitive parenting behaviours, the caregivers made positive adaptations to their children's needs, one of which being the need for a greater visual orientation (e.g. in AG strategies). The results have further highlighted that the focus of the intervention was communication and language use, rather than language structure, hence a pragmatic emphasis in intervention.

Stepwise regression analyses then provided useful information on which to seek and describe evidence of change, in that major contributors among constituents and composites that serve to explain the observed changes in the composites were identified. This information suggested particular constituents that one may dispense in further research.

Finally, a correlation analysis and stepwise regression analyses (on the four composites) investigated claims made on the basis of the hypothesis that meaning and cohesion illocutions may be viewed as outcome variables while attention-getting and eye gaze parameters may be viewed as input variables. The results yielded an interpretation such that it is possible to give rise to changes in cohesion, and hence to changes in meaning, through addressing and achieving changes in attention-getting and eye gaze. A causal relationship was thus inferred.

Given the findings presented and discussed in this chapter thus far, it is important to differentiate between statistical significance in the sense of discernable numerical evidence, and significance in the sense of clinical implications, in the interpretation of findings observed in human service delivery. Rather than a sole reliance upon the statistical test, the interpretation from the professional/s in the particular field is critical

regarding the consequence of any change that is identified. Moreover, the professional needs to be aware of and acknowledge the broader context of intervention in interpreting the findings, particularly for the purposes of evaluation.

Hennekens and Buring (1987) point out that one may obtain numerical evidence for a change that the professionals may decide is not important even though it is unlikely that the change is due to chance. This anomaly is apt to arise when the number of observations is very large. Conversely, one may find that numerical evidence is insufficient to sustain an inference of change (on that basis alone), even though the well-informed practitioner may feel compelled to interpret the data as implying meaningful change. These complications arise more often when data sets consist of only a small number of cases, due to factors such as high costs of data collection, time constraints, rareness of conditions, and so on (T. Dunne, personal communication, February 2003).

It is felt that the numerical data obtained and analyzed for the purposes of this study are particularly useful in conjunction with their qualitative clinical and theoretical interpretation, for the inferences drawn regarding effective change. Section 5.5 presents further numerical data that was not subjected to statistical analyses. However, validation was sought in the collection and analyses of qualitative experiential data as evidence for effective change. Chapter Six presents and discusses these findings. In this way, clinical inferences can be supported by the numerical evidence for change in indicating an effect for the 16 dyads of this study.

5.5 QUANTITATIVE DATA NOT SUBJECTED TO STATISTICAL ANALYSIS

Additional numerical data that warrants specific qualitative interpretation in pre-post-intervention change are presented and discussed below. These findings relate to aspects of contingency, breakdown and repair, and sign language parameters.

5.5.1 Subcategories of Turn-taking Contingency

Each of the communication categories (e.g. label, AG strategies, repetition) under investigation was not only examined in terms of mode/s of delivery (e.g. sign, physical, eye gaze) but also in terms of the particular role of the communicative behaviour in the turn-taking episodes. In this way, any before-after differences in use of communication behaviours that did not constitute breakdown could be examined introspectively. Since these behaviours did not constitute breakdown, they constituted turn-taking contingency. These roles or subcategories of turn-taking contingency included:

- Recast of caregiver's action/utterance
- Recast of child's action/utterance
- Continuation
- Imitation
- Topic change

In this section, a pre-post-intervention comparison is made regarding mode use and the occurrence of these contingency subcategories in order to provide information on the overall nature of turn-taking contingency of the caregivers' communicative contributions. The findings discussed are primarily general trends that were identified on the basis of frequencies of occurrence. Some interesting individual differences across the caregivers are also presented.

- **Recasts**

Simple recasts were identified pre- and post- intervention. Pre-intervention, caregivers expanded upon their children's communicative contributions and not upon their own contributions. Only Subjects 11, 15 and 5 produced these recasts, which were delivered by means of the gesture and/or sign mode/s and the combined nonmanual-sign mode. Post-intervention, a marked increase in the use of recasts, both of the children and of the caregivers' own contributions, was observed across all subjects. Caregivers produced

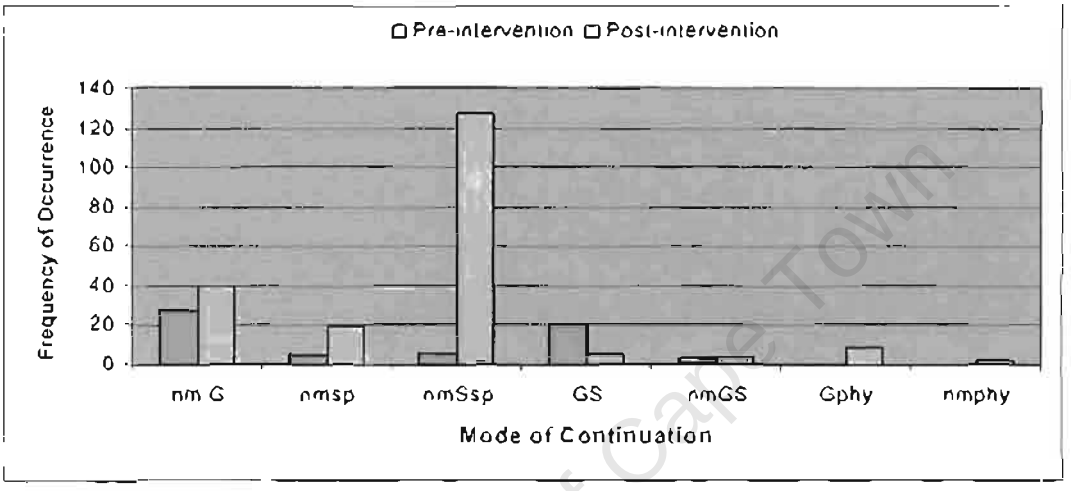
these recasts using a variety of mode combinations that indicate their increased use of sign language. The most frequently used mode in recasting was the sign modality.

A child's language acquisition is facilitated when the adult's utterances are on the same topic as those of the child and serve to expand upon the child's point (Snow et al, 1984). In this study, it was identified that the caregivers expanded upon both their own and their children's preceding actions and utterances. More frequent expansions of the child's actions and utterances indicate that the caregivers followed their children's lead more frequently post- than pre- intervention. It was identified that post-intervention the caregivers expanded upon their own contributions one and a half times more than upon their children's contributions. In both cases however, the caregivers were providing language models. Expansion is an effective way to teach language in that it confirms that the child's response is appropriate and takes him/her slightly beyond the response, modelling extra grammatical forms (Lewis & Penn, 1989).

The greater use of recasts suggests greater awareness among the caregivers regarding the importance of semantic contingency in child language acquisition and development. Simple and complex recasts have been referred to as positive contingent replies as they have been shown to be positively related to language development in non language impaired children (e.g. Nelson et al, 1984 in Conti-Ramsden, 1990). The use of simple rather than complex recasts post-intervention was expected in view of the fact that the caregivers received formal training in sign language and communication skills for the first time, and in view of the early stage of development of their children. Simple recasts are ideally suited to enhance language processing. They provide the child with a simple, informative and easy-to-process reply that helps the child to find new ways of forming utterances. Complex recasts are not as easy for the child to process at an early stage of development (Conti-Ramsden, 1990)

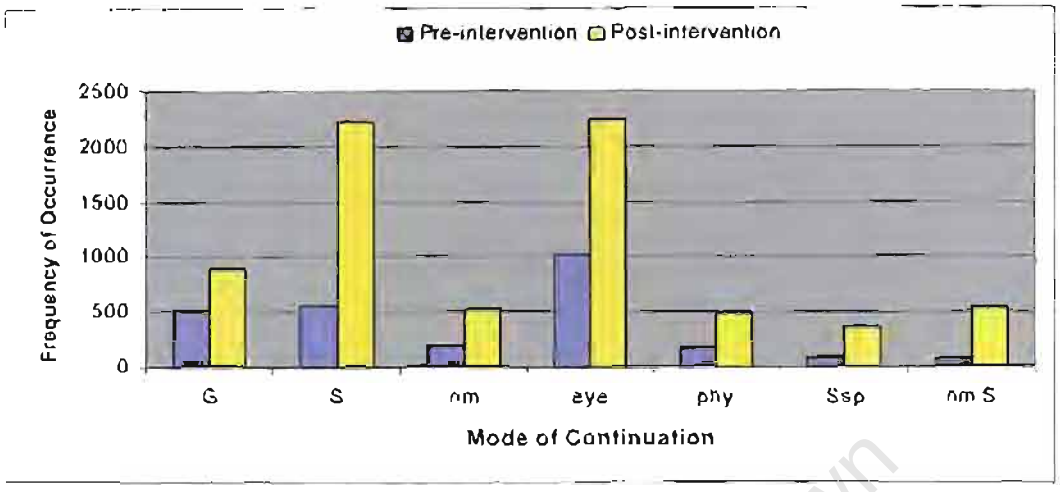
- Continuation

Figures 5.14(a) and (b) illustrate the use of continuations pre- and post- intervention. These findings are illustrates in two bar graphs (a) and (b) in view of the differing frequencies of occurrence.



Key:
nm G = nonmanual + gesture
nmSsp = nonmanual + Sign-speech
nmGS = nonmanual + Gesture + Sign
nmphy = nonmanual + physical means
nmsp = nonmanual + speech equivalent
GS = Gesture + Sign
Gphy = Gesture + physical means

Figure 5.14(a): Pre- and Post- Intervention Use of Continuations Per Mode of Delivery



Key:
G = Gesture
nm = nonmanual
phy = physical means
nm S = nonmanual + Sign
S = Sign
eye = eye gaze
Ssp = simultaneous Sign-speech

Figure 5.14(b): Pre- and Post- Intervention Use of Continuations Per Mode of Delivery

The large total occurrences of continuations pre- and post- intervention relative to the other turn-taking contingency subcategories, indicated that the majority of the caregivers' contributions in the dyadic interactions continued the same general topic of the discourse environment without contributing towards breakdown. Overall, as shown in Figures 5.14(a) and (b), the caregivers used far more continuations post-intervention, making use of a variety of modality combinations. Continuing the child's topic may bring about further child communicative contributions, as children are presumably more interested in topics that they initiate. It is also easier for children to understand adult utterances that continue the child's topic and attentional lead, because the information processing load may be less for topic continuations than for topic initiations (Chapieski, 1989 in Yoder & Davies, 1990).

An exception to increased use of continuations post-intervention was a decrease in the use of **simultaneous gestural-sign** continuations. These continuations typically comprised a point as the sign component. Out of the four subjects making use of these

continuations, one of the grandmothers (S5) produced 11 of the 20 continuations (more than half) pre-intervention. This is the same caregiver who on the basis of numerical evidence already discussed, appeared to make little improvement in her use of numerous communication parameters relative to the other caregivers. Post-intervention, only two caregivers made use of gestural-sign continuations, one of which constituted a real world connection. This decrease in use suggests greater sign language 'competence' among the caregivers. Rather than an increased use of simply pointing in addition to a gestural contribution, greater use of the **sign** mode and **sign language parameters** serving as continuations was identified. The increased use of sign language and contingent **eye gaze** as indicated in Figure 5.14(b), strongly suggests a positive shift towards a visual-gestural system of communication.

Very marked evidence for change in the use of eye gaze has been presented in the statistical results. Similarly, gaze patterns that served as continuations post-intervention indicated a marked improvement in eye gaze contingency during the dyadic interactions. This is a positive finding in view of the fact that eye gaze is one of the most critical aspects in sign language acquisition (Ackerman & Woll, 1990). Just as the visual channel of the deaf child needs to become heightened and dominant in the process of his/her acquisition of sign language, the hearing caregiver needs to be visually alert and conscious of the importance of contingent gaze and joint visual attention.

It is also evident in Figure 5.14(b) that the frequency of occurrence and nature of the caregivers' continuations indicated positive change in terms of the use of nonmanual features, physical/tactile and visual/gestural means. As previously mentioned, the caregivers predominantly made use of affective **nonmanual features**. Post-intervention, an overall greater number of nonmanual continuations was identified that comprised affective features as well as head nods and head-shakes, most of which served as acknowledgements and/or praise.

Overall, the caregivers also made greater use of the **physical mode** in their continuations. Since marked numerical evidence for change in use of successful physical AG strategies was obtained and count data indicates a greater occurrence of physical continuations than

physical topic changes, it is inferred that the majority of the physical continuations constituted AG strategies. Three caregivers made use of continuations by means of combining the physical modality with gestural or nonmanual characteristics following intervention. The former served as an attention-getting strategy and the latter served as praise. Use of **gestural** means alone that served as continuations, included functional gestures as well as actions of the caregivers that contributed towards meaningful communication.

Although the caregivers persisted in using spoken language following the 12-week intervention, the differences pre- versus post- intervention included not only less overall spoken utterances causing breakdown, but also an increased use of **simultaneous sign-speech** utterances as continuations. Furthermore, six caregivers made use of **nonmanual-speech** continuations post-intervention, whereas only S11 used this mode combination prior to the intervention. S11 produced more than half of the nonmanual-speech continuations post-intervention. An example of such an utterance is the use of a head nod while simultaneously saying "yes". Furthermore, a marked increase was noted in the use of **nonmanual features accompanying simultaneous sign-speech** continuations. Only S10 produced such continuations pre-intervention and she used the most continuations in this mode combination out of the seven caregivers making use thereof post-intervention.

The observed use of speech suggests the *intuitive* communicative style involving spoken language and an auditory orientation among these hearing caregivers. However, numerical evidence has been provided for the increased visual orientation among the caregivers in interactions with their children who rely on a visual-gestural system of communication. Moreover, the predominant modes used in continuations that constitute successful interactions indicate a greater focus on sign language parameters.

- **Imitation**

The use of imitation by the caregivers indicates a means of responding contingently and immediately to their children. Hence, turn-taking was characterized by timing, contingent responding and the exchange of signals between each of the caregiver-child dyads. The use of imitation varied over the course of the intervention in terms of communication

mode. S5 is the only caregiver who produced imitations by means of the **gestural** mode both pre- and post- intervention. The reduced occurrence of these imitations post-intervention and the greater signed imitations used by S5 suggests a greater focus on the use of sign language contingency than gestural contingency in interaction. Signed imitations pre-intervention constituted home-signs used by some of the children that were acknowledged as formal signs.

An overall marked increase in the use of **signed** imitations was observed across the group. However, the caregivers of the three youngest children (S1, S3, and S16) did not produce any imitations pre- or post- intervention. As discussed previously regarding numerical evidence of change, particular findings in this study need to be considered in terms of the *age of the children*. In addition to the absence of or minimal sign language exposure for these three children prior to intervention, they have a developmental constraint that in turn is likely to influence the frequency and nature of the caregivers' communication contributions. For example, it was identified that these three caregivers used far more labelling devices than imitation post-intervention, which may reflect the children's sign language repertoire and needs for age-appropriate language stimulation.

- **Topic Change**[15]

Rather than shifting the topic so as to cause breakdown more frequently, the caregivers used more contributions overall that shifted the focus of the same topic of conversation post-intervention. Increased occurrence of the topic- or rather focus- shifts may be interpreted in view of the overall increase in caregiver contributions in their interactions with their children. The observed pre- and post- intervention topic shifts, as part of successful turn-taking episodes, were used by means of a variety of modes.

[15] The term 'topic change' is an umbrella term for change in the topic itself and change in the focus of the topic. In this study, a distinction is made between a topic change that results in breakdown, and a shift in the focus of a topic within the turn-exchange behaviours that does not result in breakdown. Unless stated otherwise, topic change in this section refers to successful change/shift.

Eye gaze constituted the most frequent topic changes pre- and post- intervention. The majority of the eye gaze patterns used by the caregivers were temporary gazes from the child or the object immediately followed by renewing gaze to the object or the child respectively. This finding may be interpreted as a greater caregiver awareness of the importance of being visually attuned in the use of sign language communication.

The second most commonly employed mode for topic changes was the **gestural** mode pre-intervention and the **physical** mode post-intervention. Use of these modes varied across the caregivers, with no apparent pattern being identified. The more frequent use of physical than gestural means post-intervention may be attributed primarily to the caregivers' general increased use of successful physical AG strategies. Gestural means were commonly used prior to and following intervention, reflecting the frequent use of caregiver actions in shifting the focus of the topics.

Although not used as often as gestural topic changes, an increased occurrence of **signed** elements post-intervention was identified. In view of the dominant mode of continuations being that of sign language, it is inferred that the caregivers used far more signed elements that served as continuations than as topic changes, and hence contributed to more advantageous contingency.

5.5.2 Communication Breakdown and Repair

- **Occurrence and causes of breakdown**

Research suggests that interactions in Hd dyads are more likely to be interrupted than interactions of Hh dyads, because of communication breakdowns (Lederberg & Mobley, 1990 in Lederberg & Prezbindowski, 2000). The overall occurrence of breakdown, as defined in this study, positively decreased post-intervention. Pre-intervention, the frequency of breakdown across the group ranged between 8 and 56 occurrences. Post-intervention however, this frequency ranged between 3 and 25 occurrences. The occurrence of breakdown decreased across each of the caregivers with the exception of S6 who encountered merely two additional occurrences.

Unlike the situation post-intervention, the primary cause of breakdown pre-intervention was the **sole use of speech** as utterances addressed to the severe-profoundly Deaf children whose primary mode of communication is sign language. Caregiver use of speech alone to the children, as indicated by the breakdown data, decreased markedly post-intervention. This finding reveals awareness among the caregivers of the need for a visual linguistic system in communication with the children. Similarly, the incidence of unsuccessful AG strategies incorporating speech was lower post-intervention.

As presented in section **5.1.2** the ratio of successful to **unsuccessful attention-getting attempts** by the caregivers increased significantly and the fraction of unsuccessful attempts decreased greatly for the group overall. The particular unsuccessful strategies used will now be presented in terms of the resultant breakdown.

Following the sole use of speech, the second most common cause of breakdown pre-intervention was the use of unsuccessful **physical** AG strategies. In spite of a slight decrease across the caregivers in use thereof post-intervention, it also became the predominant cause of breakdown following intervention. The numerical evidence of increased use of successful physical strategies and the frequent use of unsuccessful attempts possibly suggests a general pattern of a preference for physical/tactile means for gaining the children's attention. Similarly, the caregivers used a greater number of unsuccessful **gestural/visual** AG strategies overall, in addition to more frequent successful gestural/visual attempts post-intervention. This finding may be viewed in a positive light in that caregivers were attempting to gain the children's attention by means of the gestural/visual mode unlike pre-intervention where the predominant means was speech.

In spite of a slight decrease across the group in the use of unsuccessful **pointing** in attention-getting, this strategy was a common source of breakdown post-intervention. Pre-intervention, S12 used one third of the unsuccessful points whereas the unsuccessful attempts post-intervention, were more evenly spread across caregivers.

Only one of the caregivers, pre- and post- intervention, used **sign language** in an unsuccessful attempt to gain the child's attention. This is a further positive finding in view of the strong numerical evidence for change across the group for the use of signed AG strategies.

Various factors need to be borne in mind regarding the success of caregivers' attempts to gain the child's attention. According to Swisher (1991) input strategies of deaf mothers vary over time according to numerous factors, including the child's attention span and other cognitive factors, and the extent to which the child has already learned to attend visually and to use appropriate turn-taking behaviours. Ultimately, the aim is to minimize breakdown and ensure that the child sees that which the caregiver is signing. The results on communicative interaction in this study have strongly suggested the greater visual orientation among the caregivers, as opposed to the frame of reference of hearing communication in which the auditory and visual channels can complement one another.

Even though the caregivers employed a greater frequency of successful AG strategies post-intervention, the breakdown data indicates that they were still not consistently ensuring joint attention. Similarly, Jamieson (1994) proposes that hearing loss appears to predispose mother and child to orient visually when both are deaf but it does not by itself ensure successful negotiation in that AG strategies are not always successful. Moreover, Gregory (1985, in Swisher, 1991) suggested that deaf mothers are more willing than hearing mothers of deaf children to wait for their children's attention prior to communicating.

In spite of the positive findings in this study regarding the success of AG strategies, particular instances of breakdown pre- and post- intervention occurred as a result of the **child not seeing the caregiver's' contribution** during the interaction. This occurrence increased by one and a half times post-intervention, for the group as a whole. Six of the 16 dyads contributed towards this increase. Similarly, Swisher (1991) concluded that deaf children of hearing parents in her study on visual attention missed part of the input signed to them because of the directional nature of vision and because the children did not focus consistently on the parents' signing. The increased occurrence of some of the children in

this study missing some or all of the caregivers' signed input cannot necessarily be interpreted as a negative one. The short-term nature of the intervention, the absence of prior formal intervention for the caregivers, and occurrences of attempts at repair, as presented below, need to be considered in interpreting this finding.

Of relevance to attention is the occurrence of the caregiver or child apparently **ignoring the communicative contribution** of the child or caregiver respectively, and the occurrence of **gaze aversion** by the children, thereby contributing towards breakdown. Pre-intervention, two of the children ignored contributions made by their caregivers (S12 and S13) and averted their gaze during the interactions. S12 also ignored two of her child's contributions. Five additional children averted their gaze during their caregivers' contributions. Apart from the young age of some of the children in contributing to breakdown as a result of averting gaze or disregarding the caregiver's contribution, no obvious explanations can be presented. The three occurrences of caregivers disregarding the contributions of the children may relate to the lack of a visual orientation prior to intervention. Post-intervention, none of the children ignored any of their caregivers' contributions and only one occurrence of a caregiver disregarding her child's contribution was observed. Furthermore, an overall twofold decrease in occurrence of gaze aversion by the children suggests greater visual attunement overall between the caregiver-child dyads.

An additional source of breakdown was the occurrence of **sudden topic changes** by the caregivers. One of the consequences of an emphasis in the intervention programme on contingency in interactions was that of the decreased occurrence of abrupt topic changes that disrupted the smooth turn exchange behaviours within the dyadic interactions. Pre-intervention, five of the caregivers introduced topic changes that resulted in ten counts of breakdown while only two caregivers introduced topic changes post-intervention that contributed to two counts of breakdown.

In addition to the use of speech and the foregoing strategies that contributed to breakdown, the caregivers' signed lexicons were examined as possible contributors to breakdown, in terms of semantic appropriateness and correctness. The frequency counts

of this coded category of **'wrong sign'** did not include repetitions so as not to present seemingly inflated occurrences. An overall twofold decrease in occurrence of semantically incorrect signs post-intervention was identified, suggesting greater sign language competence among the caregivers. S5, S6, S14, and S15 contributed towards this decrease in occurrence, with no semantically incorrect signs used post-intervention. Particular contributions to the presence of a semantically incorrect sign are addressed below in section **5.5.3** that addresses production aspects of the signs of the caregivers. In some instances, one/more of these aspects was/were incorrect for the intended meaning and there was no evidence in the interactions of the child benefiting from contextual cues to identify the intended meaning. Breakdown also occurred when the caregivers substituted a true yet semantically incorrect sign for their intended meaning, suggesting the caregivers' beginning stages of sign language acquisition.

It follows then that in spite of evidence of progression made by the caregivers in learning sign language, there is evidence indicative of the nature of the intervention being that of a first-time, short-term intervention programme. An interesting observation was the absence of breakdown in certain dyadic interactions in spite of the use of a semantically incorrect sign. In these cases, the child was able to make use of *contextual cues* in the discourse environment in order to follow the meaning of the caregivers' utterances that included a wrong sign.

S2 for example, produced two signs that were not appropriate to the particular context of the interaction and were consequently semantically incorrect. These signs included that of FEEL (part of the body versus a particular object) and of OPEN (book versus door). In these examples, the aspects required in the production of the signs depend on the discourse context. An important difference between spoken and signed languages is that many signs change to accommodate different contexts (Dale's SL dictionary reference).

These particular occurrences did not however contribute towards breakdown because of contextual cues provided by pictures in the storybooks that assisted the child in interpreting the caregiver's intended meaning. According to Levinson (1983 in Smith &

Lemoine, 1992). communication is based on shared or mutual knowledge and communication has taken place when the 'listener' recognises the speaker's intention.

Figure 5.15 depicts S2's inappropriate use of the sign FEEL during storytelling with her son.

Figure 5.15: Illustration of the semantically inappropriate use of FEEL

- **Use and Nature of attempts at Repair**

The findings regarding communication breakdown become more meaningful when interpreted in relation to attempts at repair of the instances of breakdown.

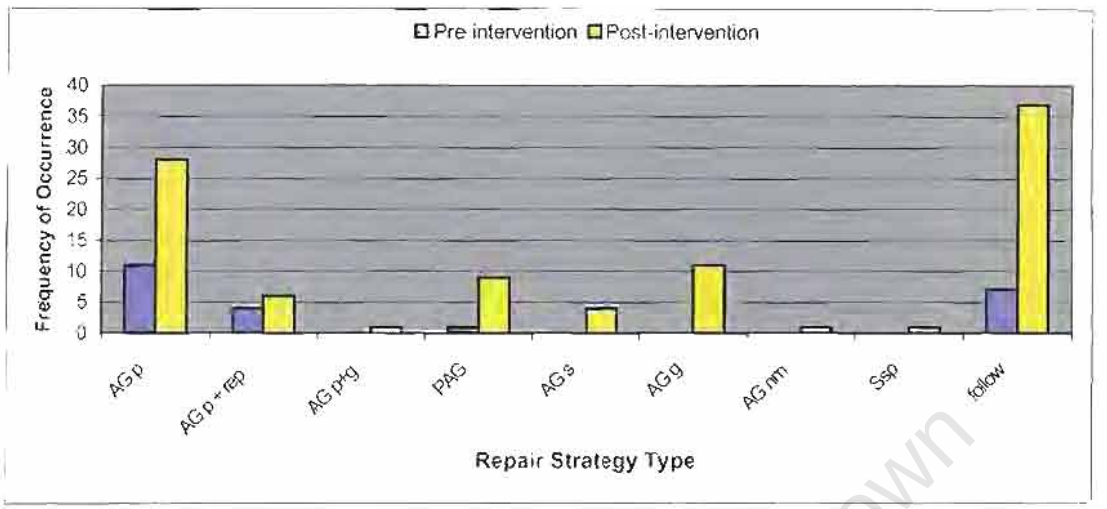
An increase in conversational repair strategies, such as repetition and expansions, has been shown to be uniformly and positively related to language development (White & White, 1984). In addition to the overall decrease in occurrence of breakdown post-intervention, a marked increase in the use of repair strategies across the group was observed. Only S5 used one less repair strategy post-intervention compared to her attempts at repair pre-intervention.

It can be inferred that the presence of strategies attempts at repair indicates awareness of the effectiveness of their communicative strategies used in interactions with their

children. The overall increased use of repair suggests that the caregivers learned to become more attuned to communicative contributions during these interactions, trying to encourage greater contingency. As the frequency of use of repair increased, so too did the overall use of immediate, unsuccessful repair increase. However, each of the caregivers who made these initial unsuccessful attempts proceeded to repair them successfully.

Pre-intervention, total successful and unsuccessful attempts at repair ranged between 0 and 4, with the most successful attempts per caregiver being 4 attempts. In contrast post-intervention, attempts at repair ranged between 2 and 15, with a highest frequency per caregiver of 13 successful attempts. The success of repair in comparison to the incidence of breakdown for particular dyads yielded interesting individual findings. For example, S8, who experienced the highest incidence of breakdown pre-intervention, employed 13 more repair attempts post-intervention and incidents of breakdown decreased more than two-fold. In addition, the caregivers of the younger children in this study (S1, S16) made particularly good progress in being aware of breakdown and immediately making attempts at repair.

In instances of breakdown pre- and post- intervention in which caregivers made more than one attempt at repair following unsuccessful attempts, the type of successful repair strategy used typically varied as opposed to repetition of the same strategy. Figure **5.16** depicts the occurrence of various types of successful repair strategies used pre- and post-intervention across the group.



Key:

AG p = physical attention-getting

AG p + rep = physical attention-getting followed by repetition of previous utterance

AG p+g = physical + gestural attention-getting

PAG = point attention-getting

AG s = signed attention-getting

AG g = gestural attention-getting

AG nm = nonmanual attention-getting

Ssp = sign-speech utterance

follow = follow child's lead and/or gaze

Figure 5.16: Pre- and Post- Intervention Use of Repair Strategies

It can be inferred from Figure 5.16 that the increased use of successful repair and the nature of the repair contributed towards greater contingency of caregiver contributions over the course of the intervention. In particular, the nature of the majority of successful repair post-intervention was **following the child's lead** through their actions and/or eye gaze and/or utterance after the instance of breakdown.

The frequent use of successful **physical AG strategies**, as a repair strategy, both pre- and post- intervention is indicated in Figure 5.16. Various **AG strategies** were commonly used repair strategies, reflecting once again the awareness among caregivers of the utmost importance of visual attention prior to communicating a message. A further

illustration of this awareness was the use of **repetition** following a successful physical AG strategy. The greater visual orientation among the caregivers relates to the use of **sign language parameters** in their repair strategies. These include the use of signs, visual/gestural and physical/tactile means, nonmanual features, and pointing, as indicated in Figure 5.16. Examples of signed forms of AG strategies in repair include COME, LOOK THIS.

The nature of repair suggests that overall, the caregivers checked that the children were attentive to their communicative behaviours more frequently post- than pre- intervention. A physical AG strategy followed by repetition of the utterance not seen by the child was commonly used pre- and post- intervention as a repair strategy. In this case, breakdown resulted from the absence of joint attention during the caregivers' contributions. As outlined in the above section on breakdown, occurrences of children missing part of the caregivers' signed input increased overall post-intervention. Pre-intervention, four out of the ten instances (40%) of breakdown due to the child not seeing the caregivers' utterance was repaired by means of physical attention-getting followed by repetition. Post-intervention, this repair strategy as well as following the child's lead, and the use of physical attention-getting followed by an utterance other than a repetition were used. Ten out of the 16 instances (63%) of breakdown in this regard, were repaired successfully.

The **sign-speech** repair strategy indicated in Figure 5.16 was that used by S4 post-intervention, following her use of a spoken label that she realized was not received by her child. This instance of breakdown was repaired by use of the corresponding label in sign language. This finding complements the positive finding of the lower incidence of breakdown due to the sole use of speech post-intervention. In spite of the high incidence of spoken language utterances pre-intervention, no attempts were made by the caregivers to repair the breakdown that resulted.

5.5.3 Sign Language Parameters

- **Sign and Sign-Speech Analysis and Mean Length of Utterance**

The concepts of an utterance and of mean length of utterance were defined in this study on the basis of the definitions presented in a terminology dictionary in the field of Speech, Language and Hearing (Nicolosi, Harryman & Kreshek, 1989). An **utterance** was defined as signed and simultaneous sign-speech words, phrases, clauses or sentences preceded and followed by a notable pause between this turn of the caregivers and the utterances of the caregivers that precede and follow this turn. **Mean length of utterance** (MLU) was defined as the average length of signed and of simultaneous sign-speech expressions obtained by counting the number of morphemes/words per utterance and dividing by the number of utterances. The word counts included repetitions. 'Non-words' such as affective nonmanual features, AG strategies that excluded the use of sign and sign-speech, and actions of the caregivers, were excluded.

The simultaneous sign-speech utterances of the caregivers were included in this analysis rather than simply the signed only utterances, in order to examine the use of sign in the caregivers' utterances that did not contribute to breakdown. Minimal use of simultaneous sign-speech utterances was not anticipated following a short-term intervention programme that constituted the first formal intervention for the caregivers. Hearing adults appear to face a tremendous challenge in trying to unlearn habitual communication patterns and to replace these with patterns more appropriate to the visual mode (Jamieson, 1994). A definite shift from an auditory to a visual orientation has however been identified in this study.

Both the word count and the utterance count for signed and simultaneous sign-speech modalities increased post-intervention across the group. Swisher (1991) proposed that hearing people who speak as they sign to deaf children create a difficulty for themselves in focusing on the information that the children receive in the visual channel. It is speculated in this study that the increased use of simultaneous sign-speech utterances

reflects an influence of the communication behaviour that the caregivers learned as hearing people. Further evidence of a habitual element is that some of the caregivers whispered and mouthed more regularly to their children post-intervention. Use of these prosodic devices suggests that the caregivers acknowledged their children's deafness and their need for a visual-gestural communication system over an auditory one.

Since the focus was on language use rather than structure, MLU was not employed as a measure of grammatical complexity as is often the case in child language studies (see Gavin & Giles, 1996; Lewis & Gregory, 1987). The general increase identified in MLU reflects the increased number of elements per sequence of signed and sign-spoken expressions. The MLU's calculated on the basis of the word and frequency counts for each of the caregivers pre- and post- intervention, are presented in Table **5.10**.

Table 5.10: Mean Length of Combined Sign and Sign-Speech Utterances per Subject

Subject	Pre-intervention MLU*	Post-intervention MLU*
S1	2	2.51
S2	1.5	1.71
S3	1.4	1.63
S4	1.14	1.77
S5	1.45	1.81
S6	1.35	1.9
S7	1	2.01
S8	1.19	1.98
S9	1.53	1.65
S10	2.44	2.67
S11	1.82	2.06
S12	1.77	1.93
S13	1.67	2.2
S14	1.38	2.05
S15	1.59	1.87
S16	0	1.6

* mean length of utterance

As indicated in Table 5.10, the shortest MLU's across the group were calculated for S3 and S16, who are the caregivers of the two youngest children participating in the

intervention. This finding suggests a reason for the shorter utterances used in this study with the younger children. However, a consistent pattern of increased MLU with age of the child was not identified. Possible factors contributing towards increased MLU include the learning styles, sign language competence, and personality characteristics of the caregivers.

In addition to the foregoing frequency counts, the content and nature of the caregivers' signed and sign-speech elements were considered in order to address the types of signs used by the caregivers, and to compare the signed element/s and the spoken element/s in simultaneous communication.

With regard to the **types of signs** used, data on the communicative functions of caregiver contributions have been presented and discussed. Of particular relevance here is the qualitative observation of a greater variety and combinations of grammatical forms (including nouns, verbs, questions, prepositions, and pronouns) employed in the sign and sign-speech modalities post-intervention. Furthermore, caregivers were making use of signs of a descriptive nature (e.g. RUNNING WATER as opposed to WATER; and SMALL BALL as opposed to BALL) in contrast to the nature of their utterances at the start of the intervention. In addition to the increased use of sign language post-intervention, the above-mentioned findings provide evidence of greater sign language competence among the caregivers.

However, the content of the caregivers' signed and sign-speech utterances pre- and post-intervention reflects an influence of a hearing person's communication patterns, suggests the possible ease with which some signs are learned over other signs, and suggests the need for an expanded sign language vocabulary:

- Many of the caregivers produced utterances that are regarded as formal signs yet considered as formal gestures used by hearing people (e.g. COME, WAIT, and GOOD.
- The iconic nature of certain signs was revealed in several utterances (e.g. WRITE, DRINK, and THROW).

- The nature of the nonmanual behaviours used by the caregivers reflects the overlap in use thereof by hearing people (e.g. shrugging of the shoulders, head nods, head-shakes, and affective nonmanual features).

A positive finding was that overall, these above three categories of signs were observed more frequently before than following the intervention. Evidently, evidence of being in the initial stages of sign language acquisition was coupled with evidence of greater sign language competence among the caregivers.

Progress was also suggested by the use of finger spelling by S3, S5 and S10, use of initialization (e.g. "S" for SAMUEL) by S10 and S3 as well as by the use of the child's name-sign by S14 following the 12-week programme.

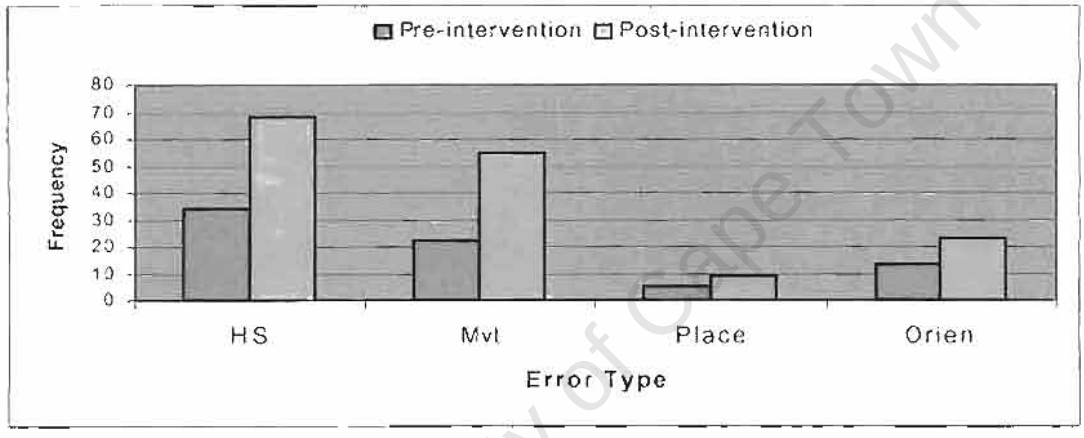
A **comparison of simultaneous sign-speech use** prior to the intervention revealed a mismatch in terms of particular elements, yet the simultaneous communication was appropriate. For example, YELLOW/"yellow box", and GIVE/"give me some tea". The simultaneous communication was not appropriate however, in the instances of semantically incorrect signs. For example, S11 produced the spoken label for "swing" simultaneously producing the sign label for ELEPHANT. Post-intervention however, a higher frequency of simultaneous sign-speech utterances were matched as well as appropriate. It is inferred that the decrease in use of semantically incorrect signs contributed towards this finding.

- **Aspects of Signed elements**

Analogous to the structure of the phonological system of oral language are the parameters of hand configuration, hand orientation, movement of the hand, and location where these occur, which arise from the patterned movements of the hands (Klima & Belugi, 1980 in Warren, Meyer & Tesner, 1986). In this study, the Deaf personnel and the researcher examined the accuracy of these four distinctive parameters of the caregivers' signs, referred to as handshape, orientation, movement, and place, in order to identify common

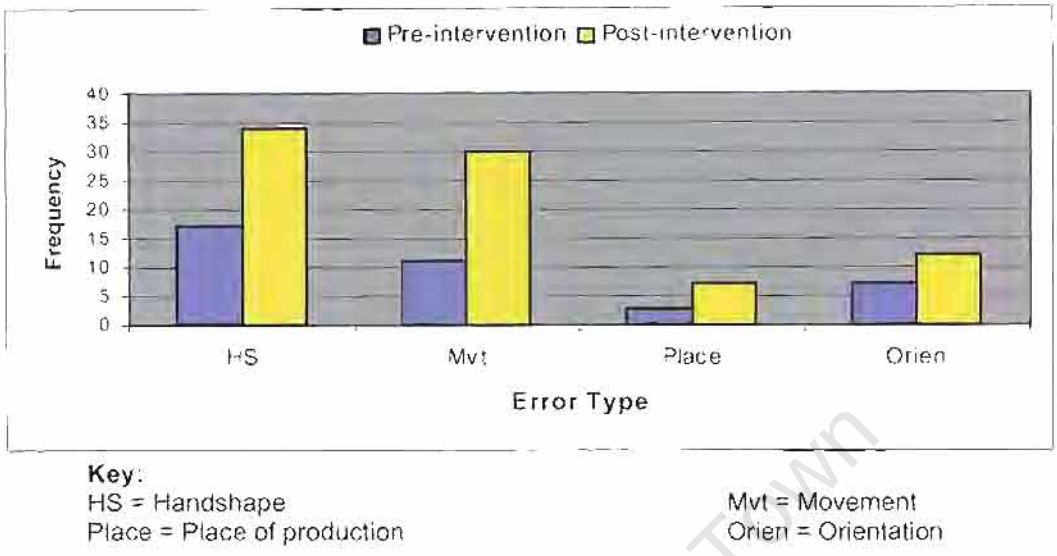
error trends. This in turn would supplement the results on caregiver sign use, and allow for useful feedback to the caregivers regarding production errors and effects thereof.

Frequency counts were tallied for the total errors made in the production aspects, including repetitions of errors across repetitions of signs (see Figure **5.17(a)**). In addition, the occurrence of errors that exclude repetitions was tallied in order to elicit information on errors of sign production across different signs, without creating an appearance of inflated occurrences (see Figure **5.17(b)**).



Key:
HS = Handshape
Mvt = Movement
Place = Place of production
Orien = Orientation

Figure 5.17(a): Pre- and Post- intervention Occurrence of Errors of Sign Production including Repetitions



Key:
HS = Handshape
Mvt = Movement
Place = Place of production
Orien = Orientation

Figure 5.17(b): Pre- and Post- intervention Occurrence of Errors of Sign Production excluding Repetitions

The occurrence of affected aspects of sign production depicted in Figures 5.17(a) and (b) reflects an increase across each of the four aspects post-intervention. This finding may be attributed to the caregivers' greater use of signs following intervention that appeared to give rise to the possibility of an increase in erroneous use of production aspects. Once again, the short-term nature of the programme is felt to be a contributing factor. In this regard, the spatial organisation of sign language, that applies to sign production aspects, was not the focus of the programme. These findings point out the need to address spatial parameters in a more long-term intervention programme.

Comparison between the use of repetitions of errors of sign production and exclusion thereof in the count data, as indicated in Figures 5.17(a) and (b) indicates a pattern of two-fold increase in errors by including repetitions. This finding reflects the occurrence of repeated signs that included errors of production yet did not constitute breakdown. Figures 5.17(a) and (b) show that the most commonly affected aspect of sign production pre- and post- intervention across the caregivers was handshape. Incorrect place of production was not identified as frequently as erroneous use of handshape, movement or

orientation, both pre- and post- intervention. Interesting observations of these four aspects will now be outlined.

The incidence of total **handshape** errors post-intervention may be attributed at large to the high frequency of repetitions of signs affected, employed by S8 and S11. S8 contributed 21% while S11 contributed 15% to the total errors across the 16 subjects. A pattern regarding handshape that was identified among the caregivers was an apparent confusion between the handshape for personal pronouns (e.g. ME) versus possessive pronouns (e.g. MY/MINE). The personal pronoun handshape was typically used for both pronouns, while S5 used a flat handshape in the production of ME. Additional handshape errors revealed an apparent confusion between the correct handshape for different signs. For example, the only difference in the production of the signs TEA and DRINK is the aspect of handshape; the handshapes for TEA and DRINK were used interchangeably. This finding suggests the need for sign practice. Difficulty with the hand configuration for POUR was also identified.

Particular signs posing difficulties in terms of both **handshape** and **movement** included question signs such as WHERE and WHAT, and the label sign for BEAR that was necessary in storytelling interactions.

An interesting finding was the possibility of a *cultural influence* in the use of sign language. For example, S2, S5, S8 and S15 pre-intervention and S5 post-intervention made use of the incorrect handshape and/or movement for the sign LOOK. Production aspects were affected in the same way across these subjects in that the handshape for LOOK was substituted by the handshape for ANIMAL with the two fingers pointing towards the face of the caregiver and the direction of movement being side to side in a horizontal plane. The decreased use of these errors in the production of LOOK post-intervention may be as a result of pointing out these errors to the caregivers during the intervention. The caregivers attributed their production to a cultural influence, suggesting that the handshape and movement aspects used were more natural for the caregivers. The persistent use of the erroneous aspects by S5 post-intervention suggests the gesture

system overlaying the sign system. Figure 5.18 depicts the use of the intended meaning of LOOK as used by S2.

Figure 5.18: Illustration of S2's production of LOOK prior to intervention

With regard to **movement**, the caregivers either employed the incorrect direction of movement for particular sign productions, or excluded movement where it was in fact necessary. For example S1's and S4's pre-intervention and S12 post-intervention, intended to produce the reflectional sign GIVE but in the absence of movement of the hand that indicates GIVE ME. This finding suggests once again an influence of Bearing communication in that in the absence of movement, the resultant sign is one of the bearing gesture give.

As previously mentioned semantically incorrect signs did not contribute towards breakdown if there was evidence that the child was able to make use of contextual cues to identify the intended meaning of the sign. S15, for example, produced the sign for TREE making use of the incorrect direction of movement, as the intended meaning was the descriptive label of GREEN. In this example, the incorrect movement necessary in the production of the sign changed the meaning of the sign. However, the child was able to make use of contextual cues and thus effect of the shared context prevented breakdown. Proof that the child used contextual cues is for example the distance of the mother

imitating the child's sign but using the incorrect movement and the child acknowledging her sign immediately after its production.

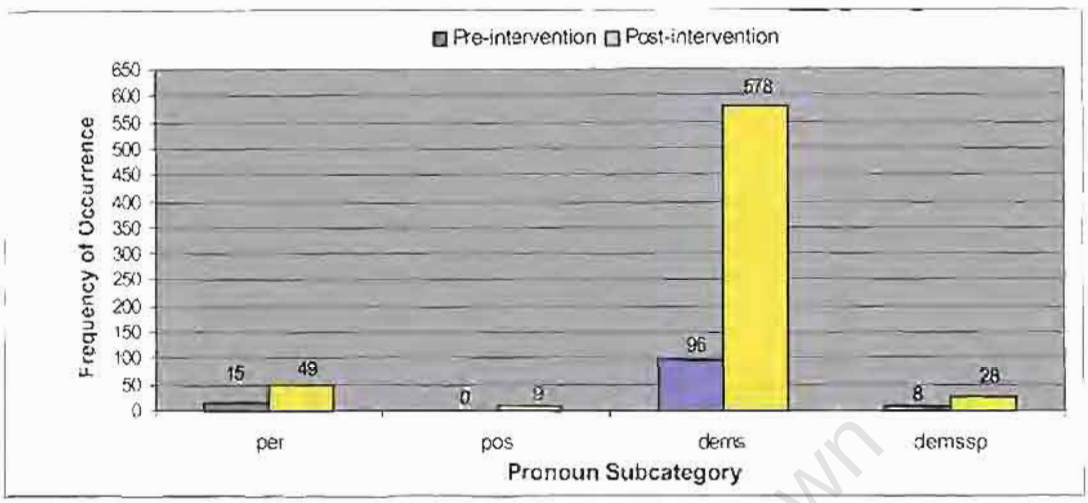
The incidence of movement errors post-intervention, as depicted in Figure 5.17, may be attributed at large to S15 who contributed 38% to the total movement errors and 33% to movement errors that excluded repetitions. S8 contributed 18% to the total movement errors identified. S7 contributed greatly to the total **orientation** errors (52%) across the group post-intervention, particularly through her repetitions of the reversed orientation for the sign FROG.

With regard to **place** of sign production, only three caregivers pre- and three caregivers post- intervention, made errors. An example was the confusion of S9 regarding the place of production for the sign BOY. The laterality was incorrect in that this sign was produced with the hand on the opposite side of the body. A positive finding regarding place of production was that some of the caregivers produced signs in the child's visual field. This strategy has been reported to be popular among deaf parents of deaf children (see Galloway & Woll, 1994). This production aspect was not coded as incorrect but rather as a teaching strategy.

- **Pronominal Use by the Caregivers**

The caregivers employed deictic pronouns. Deictic elements refer to pointing to something in the context of the utterance (Ahlgren, 1990). Deictic expressions play a critical role in mapping linguistic reference onto the physical environment (Meier, 1990). The use of personal, possessive and demonstrative pronouns indicates reference to person, place and object in the dyadic interactions.

A marked increase in use of all pronouns in the **sign** and **sign-speech** modalities was observed across the group post-intervention. In particular, signed **demonstrative pronouns** were the most commonly used form of pronominal pre- and post- intervention. Figure **5.19** illustrates the use of personal, possessive and demonstrative pronouns pre- and post- intervention, highlighting the predominant use of pointing in pronominals.



Key:

Per = personal pronoun
Pos = possessive pronoun
dems = sign demonstrative pronoun
demssp = sign-speech demonstrative pronoun

Figure 5.19: Pre- and Post- Intervention Use of Pronouns

Some of the caregivers did not make use of **personal** or **possessive** pronouns prior to or following intervention. As indicated in Figure 5.19 personal pronouns were used more frequently than possessive pronouns post-intervention. Since personal pronouns were coded as point labels, their occurrence contributes to the high incidence of labelling in language stimulation identified in this study.

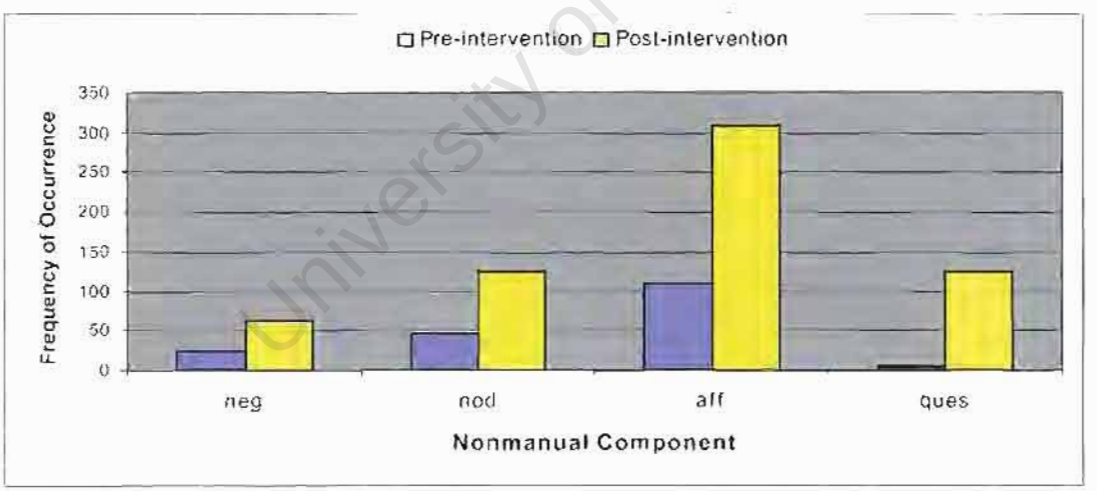
In all occurrences of pronominals as well as pointing as a means of gaining the child's attention, the nominals (people or other referents) were physically present. The first-time intervention programme for the caregivers did not address pronominal reference where the nominals are physically or temporally absent and assigned arbitrary loci in the signing space (Ogilvy-Foreman, Penn & Reagan, 1994). Reference to a previously established nominal, for example by pointing, that is not present in the discourse environment may be viewed as an important aspect to be addressed in further training of the caregivers.

Spatial indices are also important in the system of verb agreement that specifies grammatical relations in natural sign languages (Ogilvy-Foreman et al, 1994) Few

inflected verbs were noted in the caregivers' sign repertoire. Examples of these verbs include GIVE, LEAVE and GO. The foregoing findings suggest the caregivers' limited use of space in nominal assignment and verb agreement following the 12-week programme.

- **Non-manual Features**

Nonmanual behaviours function as grammatical markers in that they mark particular syntactic structures (e.g. questions and negation), represent adverbs, adjectives, and accompany particular lexical items (Ogilvy-Foreman et al, 1994; Reilly et al, 1991). Results of this study revealed the use of nonmanual features to indicate choice and product questions, negation, adjectives and adverbs. Non-grammatical facial expression indicating affect was commonly used across the group. Of note, head nods were also coded as part of nonmanual features in this study. Figure **5.20** illustrates the use of nonmanuals identified.



Key:
neg = negation
nod = nod
aff = affective
ques = question

Figure 5.20: Pre- and Post- intervention Use of Particular Non-manual Components

As indicated in Figure 5.20, a general increase in use of nonmanual behaviours was observed across the group post-intervention. Facial configurations served primarily **affective** functions both pre- and post- intervention. According to Reilly and Bellugi (1996), hearing mothers use their voice and their face to convey affective and social information to the child. In addition to being an *intuitive* communicative behaviour, the greater use of non-grammatical over grammatical nonmanual behaviours may be attributed to the caregivers' early stages of sign language acquisition. Similarly, head nods (nonmanual **nods**), headshakes and shrugging of shoulders (nonmanual **negation**) may be regarded as natural communication behaviours for hearing people. As indicated in Figure 5.20, these behaviours were used pre-intervention and increased post-intervention.

The occurrence of **questions** depicted in Figure 5.20 refers to nonmanual features alone that indicate a question, and to signed or sign-speech questions that incorporated nonmanual features. The marked increase in these types of questions post-intervention, suggests the more frequent and appropriate use of grammatical nonmanual features that indicate questions. Figure **5.21** below illustrates the use of appropriate nonmanual behaviours by one of the caregivers addressed to her son.

Figure 5.21: Illustration of S14 asking WHAT COLOUR

In contrast, nonmanual behaviours were not used to represent adverbs or adjectives prior to intervention. Post-intervention, only S12 made use of a nonmanual adverb (facial expression to indicate sucking on a baby's bottle) and there were six occurrences, including repetitions, of nonmanual adjectives. Nonmanual adjectives accompanied the signs for FAT and COLD in six occurrences. Figure 5.22 illustrates nonmanual features used by S2 indicating the adjective FAT.

Figure 5.22: Production of the descriptive sign for FAT used by S2

Even though the few occurrences of nonmanuals indicating adjectives and adverbs suggest the need for training in more advanced aspects of sign language, some of the caregivers produced signs to which nonmanual features are inherent. For example, S7 used the appropriate puffing of the cheeks in her production of FROG, while S4, S7, S9 and S16 adopted a scary face in their production of BEAR.

5.5.4 Summary of findings on the basis of data not subjected to Statistical Analysis

On the basis of pre-post-intervention comparisons of mode use and the occurrence of recasts, continuations, imitation and topic changes, detailed information was provided on the nature of turn-taking contingency of the caregivers' communicative contributions. In addition, it was shown that communication breakdown positively decreased post-intervention and attempts at repair increased. Findings indicated a greater awareness among caregivers post-intervention of the need for a visual linguistic system of communicating with their Deaf children in spite of evidence of a habitual element relating to the use of speech in the simultaneous sign-speech data. Moreover, the nature of the intervention of this study being that of a short-term intervention for caregivers with no previous intervention exposure, was reflected in certain observations. In particular, the findings relating to sign language parameters revealed the many complex aspects of sign language and that the caregivers made progress in some of these while others need to be addressed further in more long-term intervention.

In summary, both quantitative and qualitative results of the analyses carried out on caregiver-child communicative interactions pre- and post- intervention have been presented and discussed in this chapter. Within an evaluation framework, these results suggest a positive influence by the programme on the development of communication transaction and interaction and of the use of sign language by the caregivers. Further support for the observed changes being associated with the intervention is presented and discussed in the following chapter. Chapter Six focuses on the qualitative data obtained at the close of the intervention by means of the caregiver evaluation questionnaire and the focus group interviews. In particular, these methods provided experiential data for the purposes of evaluating the effectiveness of the communicative intervention programme.

CHAPTER SIX:
RESULTS AND DISCUSSION: QUALITATIVE EVALUATION OF THE COMMUNICATIVE INTERVENTION PROGRAMME USING THEMATIC ANALYSIS

In this section, the findings that emerged from the evaluation questionnaire and focus group interviews carried out at the close of the communicative intervention programme are presented and discussed. These findings are considered under each of the themes, as shown in Table **6.1**, which emerged from the thematic analysis of the data.

Table 6.1: List of Themes identified

Deafness, Disability and Communication
Value and Devalue
Low Socio-economic Status and Health Service Delivery
Parent-training Service

6.1 DEAFNESS, DISABILITY AND COMMUNICATION

The findings obtained from the thematic analysis of the focus group interviews, in particular, highlight the complexity and uniqueness that deafness brings to the situation regarding impairment, activity limitation or participation restriction that indicate disability, and more positive experiences that indicate functioning. Deafness in itself as impairment ultimately becomes a disability due to wider social and environmental barriers within a hearing society, due to the impact on the development of communication. The various perspectives on deafness further embrace the complexities involved.

The need to address communication is well recognised. Addressing communication through the use of sign language within a socio-cultural model implies the absence of a disability. The medical model however, views the person as having a disability that needs to be fixed so that the person can fit into society. According to Reagan (1990 in Takala et al, 2000) deaf people may be seen as a cultural and linguistic minority rather than as people with a pathological medical condition. In fact, they distance themselves from impairment and disability (Corker, 1998 in Takala et al, 2000).

The following discussion addresses aspects of disability in relation to the deaf child's communication development. Contextual factors as barriers to functioning are discussed while the more positive experiences are also described. In this way, the complexities regarding the implications of deafness for the child and his/her caregiver, according to the focus group interviews and evaluation questionnaire, are documented and discussed. In view of the intervention of this study focusing on caregiver-child interaction, findings relating to the family and community of the Deaf child are simply outlined, being acknowledged in the context of disability. All findings are documented in accordance with the International Classification of Functioning, Disability and Health (ICF), (WHO, 2001a), which superseded the classification of impairment, disability and handicap to allow positive experiences to be described (WHO, 2001a).

In line with numerous views against the classification of impairment, disability and handicap, the ICF (WHO, 2001a) is a classification with an extended scope that challenges mainstream ideas on the understanding of health and disability. The ICF is the most recently accepted international standard to describe and measure health and disability (WHO, 2001b). Disability is not viewed as a problem of a minority group nor just of people with a physical impairment, but rather in terms of one's ability to participate actively in daily living in the community. The ICF considers the social and physical environment as aspects of disability in terms of their impact on one's functioning, rather than focusing on the problem lying within the person (WHO, 2001b). Table **6.2** depicts the ICF framework that applies to this study.

Table 6.2: The ICF Approach to Classification (WHO, 2001a:14)

	Functioning and Disability		Contextual Factors
Components	Body Functions & Structures	Activities & Participation	Environmental Factors
Constructs	Change in: ▪ Body functions (physiological) ▪ Body structures (anatomical)	Capacity executing tasks in standard environment Performance executing tasks in current environment	Facilitating or hindering impact of features of physical, social, attitudinal world
Positive aspect (Functioning)	Functional & Structural Integrity	Activities Participation	Facilitators
Negative aspect (Disability)	Impairment	Activity limitation Participation restriction	Barriers

The South African disability rights movement defines disability on the basis of the social model of disability as follows. Disability refers to the disadvantage or restriction of activity caused by the way that society is organised, taking little or no account for people with physical, sensory, or mental impairments. Disability is therefore imposed on people with impairments who become disabled by society rather than by their impairments (McLaren & Philpott, 1999). Deafness as a disability has been well documented (see McLaren & Philpott, 1999; Whyte & Ingstad, 1998). The 1996 South African population census classified the population according to disabilities including sight, physical, hearing, mental, multiple, and unspecified disabilities (Population Census, 1996 in Guthrie, 2000).

In the case of the Deaf children in this study, the communication breakdown in the environment (that involves the caregiver, family and community) relating to deafness, brings about a disabling situation for them. Throughout the following discussion on deafness and implications thereof, the context of low socio-economic status needs to be borne in mind and will be addressed in section **6.3**.

While some of the caregiver's comments indicated the impairment of the hearing loss, others correlated highly with that which is classified as participation restrictions, according to the ICF (WHO, 2001). That is, the child cannot hear or speak and consequently, the deafness is interfering with effective communication in the child's immediate environment as well as creating a societal disadvantage in limiting or preventing his/her participation in social activities that require communication with hearing people. Deafness as a disability implies that the focus is not on deafness but rather on the implications of deafness and the absence of access to an appropriate language for communicative interaction.

With regard to an impact on communication, the thematic analysis revealed that the children's not speaking was of a greater concern than their not hearing. Hence, a communication disability was present. Feelings of frustration and hurt were identified with regard to the caregivers coping with their children not being able to speak.

C16: *"...At her age she is supposed to speak already. I must now actually be her ears so that I can teach her the signs"*

C10: *"It is a bit difficult but with time you get used to the fact...the child's frustration and your frustration...sometimes you say you can't anymore...you try to help but it is quite difficult"*

C16: *"It is especially when she* [Deaf child] *is around children of her age who speak properly...sometimes you feel hurt that your child can't speak with them, because there are times when she wants to speak. She plays with them and they talk to her...then you actually feel sad and a bit frustrated"*

This viewpoint of a communication disability relates to a social perspective of deafness. Moreover, it relates closely to the view of the Deaf as a cultural community who assert that they are simply a linguistic minority and not disabled at all (Dolnick, 1993 in Reagan, 1996). Factors of importance in this debate include for example, the way in which hearing people (including professionals) view and understand deafness, sign language and other components of the deaf world (Reagan, 1996).

C10: *"It* [Deaf culture] *is almost like another nation for us"*...C16: *"...they are not another nation. They weren't brought up with us. Their culture is...what is*

fostered in them...it's only that they are using another language...sign language, where we have the spoken language"

Some of the caregivers viewed disability in terms of physical or intellectual ability or the degree of independence of the child, which concerns participation in society. According to the ICF (WHO, 2001a) these caregivers do not view deafness as a disability per se. The following excerpts indicate that they are concerned with the impairment of the hearing loss and positively with functioning. Interestingly however, these caregivers are talking about disability in its true sense.

C4: *"But he is not disabled...he is clever and he knows right from wrong"*

C8: *"He cannot hear but he can walk by himself...his mind is working well, it is awake"*

C1: *"I don't think that he is disabled because there is nothing that he cannot do...Let's say that a disabled person is someone who cannot do anything for himself"*

C9: *"...she was able to speak but she got sick. She had meningitis. After that she was never able to speak"*

Some of the caregivers in fact used the term 'disability' in referring to the child's deafness. According to the ICF (WHO, 2001a) these caregivers are referring to impaired body function.

C15: *"...if they know the child has a disability, like now with the hearing loss..."*

C12: *"...has the child complained about the disability yet...they don't know what it is to hear"...* C10: *"...that's why it is not a problem for them"*

At the societal level, a communication disability within hearing societies was highlighted. In particular, one of the caregivers expressed her perceptions regarding an apparent disadvantage for deaf people, namely loss of hearing and poor speaking ability, that influences education and employment in a hearing society. From a socio-cultural perspective however, societal barriers to access to education and employment disable deaf people.

C10: *"They struggle a lot to get through to the hearing world. They are always trying to show the hearing people they are also normal, 'we can also do what you are*

doing, just because we can't talk and hear doesn't mean we can't do anything'...On Sundays I watch that deaf TV programme...there is no work...a lot of them don't want to learn about crafts and arts...Some of them are intelligent and want to go further with their studies...then it comes to a point you can't talk and hear...they are actually struggling to get to a level where they can be educated, but we ignore them"

The thematic analysis highlighted the primary implications of the children's deafness as decreased hearing acuity and either the poor use or the absence of speech. The child not being able to hear or speak was found to have far-reaching implications in terms of communication with his/her caregiver, family and community; in terms of resultant attitudes of caregivers, the family and community members; and in terms of coping with and raising a deaf child.

These implications indicate the presence of a communication disability in that the degree of the child's deafness necessitates the use of an alternate to speech that is not accessible in a hearing, speaking family and community. Access to and use of an appropriate means of communication for transaction and interaction therefore implies the absence of a disability. Without this access and use, the nature of the disability in society is such that the wider social and environmental influences cannot be disregarded. According to Imrie (1997), the concept of impairment (i.e. hearing loss) needs to be placed within its socio-cultural context. In this study, sign language became an appropriate alternative to spoken language.

C16: *"...that* [sign language] *is now actually the language of the deaf child"*

The signing skills of parents, their attitude towards signing and the opportunities they have to learn sign language, are strongly related to each other and have a direct bearing on parents' sign language use (Bornstein, 1990). The communicative intervention programme trained caregivers in language and communication strategies using sign language as the primary means of communication in order to enable them to use an appropriate mode and methods of transaction and interaction with their Deaf children. Moreover, the opportunity for the caregivers in this study to learn sign language provided information on for example, their attitude towards sign language and their experiences using sign language with their children in different settings.

Joseph and Alant (2000) propose the importance of accepting sign language, learning to sign, and interacting meaningfully and easily with the child through signing. A sense of relief and of hope was identified in view of an alternative to speech that allows for interactive communication, and hence minimizes the effects of communication disability. An overwhelming sense of satisfaction and acceptance of the use of sign language to communicate with the children was revealed in the focus group and evaluation questionnaire responses.

C7: *"I thank the fact they have helped me in that even though she is not going to speak she is going to use her hands to communicate"*

C16: *"I learned to communicate with my child, and it is a language that I can learn...we can now understand one another"*

C9: *"It helped me a lot coming here because I did not know sign language...and I learned how to communicate with her because I didn't know how to talk to her before"*

The tremendous benefits of learning and using sign language and overall improvements in dyadic communicative interaction that were identified, are highlighted in the theme of the parent-training service in Section **6.4.1**. However, the need for communication breakdown strategies was evident in that strategies employed post-intervention that were reflected upon in the focus group interviews were those of seeking **support** from an older deaf signing child, and requesting the child to point when the caregiver failed to understand the child. Indeed, the latter requires the physical presence of the referent, and an absent referent according to the particular caregiver (C8) rendered this strategy not helpful (*"That is difficult"*). The results of the caregiver-child interaction analysis reveal the repair strategies used both pre- and post- intervention, indicating increased use of successful repair following participation in the programme.

C15: *"You must first get the child's attention, he must look at you in the face and make eye contact and then talk with him...I now know how to communicate with my child, we use the signs"*

C2: *"What is helping me is that there is another child who goes to school there, who is in Standard ten, and stays near my house...now there is nothing that bothers me*

because he can also speak the language and would tell me that she [Deaf daughter] *means this when she does this"*

A family and a community reliance on the caregivers' knowledge and use of sign language were reflected.

C4: *"At home, I'm the one that most people ask as to what he is saying"*

C8: *"Sometimes you leave your child in another person's care. You must tell them that when he is using this sign you must know that he wants this particular thing. You are making things easier for the person"*

Deaf role models and the use of sign language as the primary means of communication were critical in the intervention programme. The 12-week programme is however a short-term, first-time intervention programme for the caregivers, necessitating content including pre-linguistic communication skills required for deaf interaction, language facilitation for early learners, and sign language. Learning sign language is a life-long experience. Long-term intervention is certainly necessary in order to address further training in sign language for the caregivers, as well as a greater family involvement either directly or indirectly. As reported in the interviews, caregivers were relaying information from the programme and teaching sign language to other family members. Moreover, families were provided with an opportunity to learn about communicating with the deaf by means of the sign language booklet and video, and the language and communication booklet. These issues are discussed in more detail as part of the parent-training service theme.

It was identified in the interviews that the child's deafness has far-reaching implications on communication within the family and in the community with the result of a disabling situation. Moreover, comments of the caregivers indicated difficulties in coping with and raising a Deaf child. Lederberg and Prezbindowski (2000) propose that it is not the child's deafness but rather the difficulty experienced in dyadic communication that has a general negative impact on mother-child social relationships. High rates of behavioural difficulties are found among hearing-impaired children and lead to an increase in parenting stress (Quittner, Thompson-Steck & Rouiller, 1991). As with all children, the social and emotional behaviour of deaf children is influenced by their ability to

communicate with significant others (Greenberg, 1980a). Behaviour management issues particularly as they relate to appropriate communication with a deaf child were addressed in the programme. The trend that emerged from the interviews was that of an improvement in communication, resulting in improved behaviour and the child being easier to manage. A decrease in difficulties in caregiver-child communication encouraged more positive child behaviour patterns and lowered parenting stress. This trend is addressed further in the theme regarding the parent-training service.

In most cases however, signs of frustration persist for both the caregiver and the child as occurrences of communication breakdown continue. The various responsibilities of raising a Deaf child evidently placed additional stress on the caregivers. The link between communication mismatch, child behaviour and caregiver-child relationship was indicated.

C13: *"The parent-training helped a lot that we can communicate with him and the discipline that we should have with these children"*

C6: *"Coming here helped me because I can speak to her now when I tell her something or send her somewhere to fetch something...and she now knows NO when I say NO"*

C16: *"You almost feel as if you're failing your child and you feel grumpy because your child doesn't understand you...if we don't understand...what she wants to say...she gets frustrated and throws something and then you feel sad that you can't even ask your child what she wants because she can't hear us"*

6.2 VALUE OR DEVALUE

C10: *"...you see many kinds of people. You get people who look down on the child. You get people that will help your child. Then you get those who are cheeky with your child"*

The second major theme that emerged from the thematic analysis was that of value and devalue. The positive perspective of value and the negative perspective of devalue were identified on the basis of inter-related issues namely, a psychological response to deafness, acceptance, attitudes towards deafness and the Deaf child, and support. These issues were addressed in the programme components of communication and language,

information and knowledge, support, and educational advocacy. In this way, a perspective of value rather than devalue among the caregivers would strongly suggest the success of the programme objectives. Moreover, a positive perspective encouraged positive expectations for the child's future. This section provides a discussion of these above-mentioned issues.

Local attitudes and physical barriers that typically change from one society to the next determine the definition of disability. Consequently, opinions on these definitions are varied (Philpott & McLaren, 1997). It is as a result of varying interpretations of disability that numerous models, including the medical and social models, of disability have emerged. The content of this theme of value and devalue relates to influences primarily of the caregiver, and also of the family, community and culture. In this way, a social model of disability is adopted.

According to Harry (1992 in Rose 2002) disability is a socially constructed concept. As is the case with the terms of 'race', 'ethnicity' and 'culture' that are sometimes used to describe the same things, the term 'disability' is one whose definitions are derived by both the culture and the community. The science of medicine has been highly regarded leading to the assumption that experts have the knowledge about truths regarding the conditions and needs of children with disabilities. This assumption often devalues the perceptions and understandings of the individual, family and community (Harry, 1992 in Rose, 2002).

Differing opinions, attitudes and beliefs about deafness in children influence the way that the family and the community interpret deafness. As a result, the way that the members of the family and the community value, interact with and treat the children is influenced. Whether the life of the child is valued or devalued may ultimately influence the way that his/her family treats the child and community in which s/he lives. Moreover, the way that the child is treated invariably has an effect on his/her later performance (see Calderon & Greenberg, 1997). This is especially true in the context of the family, which is the primary developmental context for young children (Crnic & Stormshak, 1997).

6.2.1 Value

Deafness and the implications thereof indeed had an impact on the **caregivers** but an overwhelming sense of value towards their children was evident. Moreover, it was apparent that the caregivers valued deafness over mental handicap.

C5: *"You must tell that person who does not have a child like yours that someday she will be given a mentally handicapped child even if it is through her daughter or any other way"*...C8: *"...which would be worse than your child because your child is intelligent"*

C8: *"What I want is a child, nothing else...he is fine, luckily [name of child] is normal mentally"*

The ability to cope effectively and constructively with a permanent disability can only begin once the family is fully aware of the irreversibility of the condition and of the full range of its effects (Vash, 1982 in Vernon & Andrews, 1990).

The grief reaction, based upon a model developed by Kubler-Ross (1969), is a fluid process that cannot be divided into mutually exclusive areas. This model was based upon the grief process of terminally ill patients and includes the stages of denial, anger, bargaining, depression, and acceptance. Stages of grief do however continue in various forms throughout the life of the deaf child as they are not time linked (Luterman, 1987). The issue of acceptance of a child's deafness is perhaps in itself a fallacy – does a parent ever really 'accept' the deafness of his/her child? Pray (1996) suggests that a more appropriate term than that of 'acceptance' would be 'adaptation'.

C11: *"It is very difficult to describe how I actually felt. It wasn't a nice feeling to think that she is deaf, she can't hear again, and if she is deaf she won't be able to talk normally...that was very difficult for me...I must accept it you see. It is not about how I feel, it is about her, how she can communicate"*

Over time parents adapt to the idea of their child's deafness and adopt various coping strategies. The type and success of the particular strategies employed usually depends on the personality characteristics of the person and the presence and severity of various stressors in that person's life (Quittner et al, 1991). Numerous stressors, including community and cultural influences and socio-economic factors, were identified and are

discussed throughout the various themes. The psychological responses classified according to stages of adaptation experienced by and shared in the focus group interviews among the caregivers will now be discussed. In spite of the presence of many stressors and the need to progress through stages of adaptation, the caregivers overall demonstrated an attitude of value towards their children.

Denial is one of the most important of the coping mechanisms, in reaction to the diagnosis of deafness. This initial denial enables parents to mobilize their energies and move forward. Yet, denial is to be followed by an acknowledgement of the reality of the disability and a period of mourning in order for constructive management of the problem to begin (Vernon & Andrews, 1990).

C16: *"According to me she could hear when I called her; I was probably in denial"*

A reaction of shock to the diagnosis and permanence of deafness is well documented (Luterman, 1987). Even though the absence of required responses by a child to auditory stimuli created a suspicion among the caregivers that something was wrong, the initial response of the diagnosis was one of **shock** and **disbelief**.

Luterman (1987) suggested that the emotion of shock is a self-protective mechanism, much like denial. The intervention programme allowed for many opportunities for group discussion. In particular, caregivers were encouraged to talk about how they feel about the deafness. Caregivers should be allowed to express their feelings openly without fear of being judged. If too much information is provided in this time characterized by high levels of anxiety, which limit cognitive ability and hence the ability to process information, feelings of panic are likely to arise (Luterman, 1987). Rather, Luterman (1987) suggests that this is a time for dealing with caregivers' questions and that people are ready for information once they can formulate questions.

C4: *"I was devastated and worried...I cried when thinking that my child is never going to change"*

C11: *"For me, it was also actually a shock at the beginning"*

C8: *"When we are together like this as parents we get something because when you talk about your problem; there is advice because we are together"*

In addition to shock and disbelief, a sense of **hopelessness** was identified. Feelings of **bewilderment** were evident. Luterman (1987) proposes that many parents respond to their child's deafness with indignation that such a thing could happen to them.

C1: *"I don't even want to lie. I never thought he would be like that...I cried here at* [the hospital] *thinking that what I've been told is beyond my control"*

C4: *"I was devastated and worried"*

C16: *"That day I didn't know whether I should cry or what...you don't really know how to feel"*

Anger and **guilt** are common reactions during the adaptation process. Myerson (1983 in Luterman, 1987) views guilt as being self-directed anger that the parent could have, or should have done something to prevent the deafness. Anger was not identified in the thematic analysis and the only evidence of guilt identified concerned the acceptance of a Deaf child as it relates to a religious explanation of the isiXhosa caregivers.

C5: *"You will be guilty when God has given you something and you don't accept it"*... C1: *"That is what my mother is saying if he comes home beaten up and crying"*

Coping with deafness is most constructively faced when there is a realistic awareness that it is a loss of an important sensory modality (Vernon & Andrews, 1990). The loss of this modality has major ramifications and necessitates that parents re-address their expectations and hopes for the future of their child (Perold, 1999). The focus group interviews in particular, provided evidence of such awareness that strongly suggests that the intervention programme contributed greatly towards a positive process of adaptation.

C5: *"These people who cannot speak have those special signs"* ...C8: *"That depends on the child's hearing because the child's speech depends on his hearing...The fact that she was never able to say mama is because she was never able to hear"*

Kubler-Ross (1969) identified the final stage of the grief reaction as being **acceptance**. In general, acceptance of the caregivers was shown to be conditional. Factors such as

communication, intelligence, health and access to education were indicated in bringing about positive acceptance.

C9: *"I am also very happy about the fact that I can sit down with the child and communicate with her. But before, I was not able to communicate with her"*

C2: *"I accept my child cannot speak and will end up following the Deaf culture, as long as I know that she is now going to be able to communicate with me"*

C16: *"At the beginning it was very difficult to accept it, because she is not going to be totally normal or like my other child, but now I can see in the parent-training; now I can communicate with her and it is not that difficult anymore. There are times when I get angry, difficult and so, but we are coming along well"*

C13: *"I did accept it from the beginning because as long as he is healthy, and he is very healthy and very alert, very clever for his age"*

The extent of acceptance of deafness and sign language by one of the caregivers was such that she indicated no interest in possible medical solutions to deafness, such as cochlear implantation. Cochlear implantation as an option for the children participating in the intervention programme is discussed under the theme of low socio-economic status and health service delivery.

C8: *"Now that I can try to speak it [sign language] I do not have any problem. He is fine - to speak to him in that way. Even that thing that the doctor can cure children to speak again, I don't want to hear a thing. I will never go there. He is okay like that. He can stay like that and I'm also used to him like that"*

Parents may revisit various grief stages during the child's life that are usually initiated by particular stresses or anxieties, such as educational decisions (Luterman, 1987). Acceptance is therefore not devoid of grief (Luterman, 1987). Responses of the caregivers highlighted that acceptance is an ongoing process, one of adaptation throughout a series of events and influences that are both positive and negative.

C7: *"I accept it as long as when he is ready for school he will get a school. But he is still young for now"*

C8: *"I did not have a problem...but I told myself that whatever I have I would give him education if there is a way and a school"*

C1 was the only caregiver who expressed that she continues to find acceptance of her child's deafness and the implications thereof difficult. Others could relate to this mother's struggle in that they had experienced the same feelings when their children were of the same age. Caregiver support within the group was thus likely to encourage feelings of acceptance for C1. Furthermore, the programme was described as *"motivating"* (C13) and *"encouraging"* (C15).

C1: *"My child is three"* ...C8: *"That explains why you have not accepted this"* ...C4: *"With us too, at that time it was difficult"* ...C8: *"It was difficult for us at the time that they were still young"*

Additional factors identified as aiding in acceptance included a supernatural element and the management process. Explaining the child's deafness as part of God's plan not only helped some of the caregivers to account for the cause of but also in coping with the child's deafness.

C8: *"He's fine just the way he is and God knows why He has made this child like this...my first child did not survive. This child survived with this problem but God knows why, even if he was made like the one who is drooling he is fine"*

C16: *"It is how God gave me the child and he's responsible for how everybody is born, how they look. So, I accept. God decided to give me a child with a hearing problem; there's nothing that anybody can do about it"*

The foregoing discussion has demonstrated the process of acceptance that led to an overall greater perspective of value towards both the children and deafness. Such a perspective was further demonstrated towards the children in terms of the caregivers' willingness to be involved in the life of their children. This role of the caregivers applied to for example, participation in the intervention, activities of daily living, teaching discernment, and school involvement. Such involvement is indicative of interest in the child, and hence some degree of acceptance, and hence of value.

C16: *"Everything that they did here, that they present, we've received but I would want to know more if there is more to learn"*

C14: *"People need to come. We are glad about the fact that we have to be here"*

C10: *"It is about motivation; if you don't make an effort with the child that child won't work and won't progress"*

C6: *"I teach her to sweep, to wash dishes, and to know right from wrong"*

In addition to the caregivers, acceptance and hence value by the **family** was identified. An attitude of love of the caregivers as well as the family was indicated toward the child.

C4: *"They love her at my in-laws, even my mother-in-law and her grandfather; they love her a lot...when we visited them they wished we would stay longer"*

Interestingly, the family members regarded the Deaf child as 'special' whereas the caregivers generally regarded the child as 'normal' in that there is no difference between a hearing child and a deaf child. Unlike the family, the caregivers did not view their children as being 'different' from other children, yet both attributed value to the child. In general, the family attributed value by expressing this difference in a positive light and offering a suggestion that the child is special in some way. The caregivers attributed value to their children in the sense that they did not view them as different from mainstream society children who should be treated differently. This discrepancy in attitudes brought about disagreement between the caregivers and members of the family in terms of child behaviour management.

According to Irlam (1996) a charitable view of disability sees the child in this case as deserving pity and sympathy, essentially dependent on others. This view is limiting to disabled people as it assumes that they cannot be independent, autonomous human beings (Irlam, 1996).

C16: *"Pity and shame...everybody now feels so sorry for her, they pamper her"*

C8: *"My family loves him a lot in such a way that they didn't want him to be punished when he has done something...it would be me who tells them that he is also like the other children. He does do wrong things just like the other children because this person is normal, his mind is wide awake"*

It is apparent from the above excerpts that a view of disability referred to by Irlam (1996), as a human rights view was generally present among the caregivers, although not the family. This view states that people with disabilities should have the same

opportunities as able-bodied people, and should be regarded as equal and positive contributors to society. The social model sees disability as a human rights and development issue (South African Federal Council on Disability, 2002). In line with this view, a strong sense of responsibility among the caregivers regarding teaching and behaviour management was evident.

C8: *"...You mustn't feel sorry for him...they are not different from the other kids...they can do everything that can be done by other children"*

C10: *"you must treat them as normal as possible"*

C8: *"It's important that you teach him as he is just like the other children. You mustn't feel sorry for him. He must learn to differentiate when something is wrong, that I now don't like a specific thing that he is doing and he must see that it is not right"*

As mentioned above, family members viewed the Deaf child as special. Similarly, the child was valued by the **community** in the sense that s/he was regarded as different from other children.

C1: *"They love him and they like speaking to him...a lady going to town would sometimes ask me if she could take him to town with her"* ... C8: *"I wonder what it is that people see from this child that is so special"* ... C1: *"Sometimes he would come back with clothes or something else"* ...C5: *"You also have to console yourself"* ... C8: *"Yes, accept it you see, it would have been difficult to accept it if it was not for the other people* [in the informal settlement]*"*

Both the **family** and members of the respective **communities** indicated value through showing an interest in learning how to communicate with the child. This is a positive finding in view of the presence of a communication disability in a hearing, speaking family and community.

C4: *"I can see that they want to learn* [sign language]*"*...C9: *"Yes, they like the way she speaks"*

C5: *"There are so many of them who come to my house and ask how they can go about learning to speak to this child because they like speaking to him"*

6.2.2 Devalue

Perceiving a difference between deaf and hearing children in a negative light may lead to categorizing the deaf child as belonging to a specific social group and ultimately devaluing the child. According to Irlam (1996) this viewpoint is one that sees disability from a medical perspective. A handicap is seen as making the child disabled and hence the child is excluded from mainstream social and economic life because s/he is thought to be incapable of sustaining a 'normal' life in the presence of the handicap (Irlam, 1996).

As can be expected, the caregivers of the Deaf children may be affected by devalue attributed to their children. They may feel marginalized, ignored, intimidated or humiliated (Dobson, Middleton & Beadsworth, 2001). Although a value perspective was evident among members of the **community**, the community was still found to place a tremendous impact on the caregivers through signs of devalue. A greater number of comments of devalue from the community, than comments attributing value to the Deaf children, were identified.

The sense of denial was not only restricted to the initial stages but continued further into much later stages (Luterman, 1987) for the one caregiver (C1) for whom acceptance was made difficult primarily because of the attitudes and responses of members of the community. Once again, a disabling situation was highlighted.

C1: *"I can see that he is not going to hear but I have not accepted the fact that he cannot speak and this is difficult because he plays with the other children...he comes back crying and children his age beat him. Children his age do not understand that he is different"*

This caregiver shared numerous unfortunate experiences during the interviews regarding the community children's behaviour towards her son. Responses from some of the caregivers indicated the possibility of these experiences having a direct, negative influence on C1's acceptance of her son's condition. This situation highlights the need for team members to be aware of the ongoing need for counselling in terms of their

emotional response and stage of acceptance. Devalue attributed by children in the community was not unique to C1 alone.

C9: *"...it is unacceptable..."* ...C8: *"They are going to spoil this for her. They will make her not accept this thing about her child"*

C10: *"There is a lot of prejudice where those children are concerned...some children play nicely with them but you get those children who can't talk so they will stab them in the back...At the end of the day the mother comes and she says...what does your child know, she can't even speak. Then it is a whole argument"*

C1: *"My one goes to watch TV...there is one of the children who has broken something when he was together with some children. It will be my one who has broken the thing"* ...C9: *"It goes like that in those halls. It is just the same in my situation, it goes like that in the shacks"* ...C1: *"Yesterday they were watching TV and there were many of them. I just saw him being chased out and they were saying 'Get out! Get out!'...I don't like this"*...C4: *"They accuse him of everything because he cannot speak"*

C9: *"I sometimes cry as well and think that it will be better if I leave to the rural areas"*

In addition to children in the community, it was identified that adults also influenced acceptance and coping for the caregivers. Community perceptions and responses regarding deafness and caring for a deaf child clearly burdened many of the caregivers. The impact of disability thus extends well beyond the disabled themselves. While individuals bear the brunt of impairment, disability creates hardships for those who care for those with disabilities (Committee of Inquiry, 2002).

The perspective of devalue that was identified resulted in for example, conflict, and feelings of sadness and hurt. An inadequate understanding and awareness by community members regarding deafness and implications thereof was indicated.

C4: *"My neighbours thought that she will eventually talk...there was another woman whose sister was unable to speak and could only speak when she was five years old...They said 'your child is going to speak...she can say mama. Maybe when she's cross she will say no-no' "*...C8: *"With me too, they disagree a lot with that thing* [speaking ability]*...They are still saying that maybe he is still going to speak"*

C10: *"...when you were here* [tertiary hospital] *the doctors explain to you this is the ear, this is wrong with your child's ear, and you feel that you know what is wrong...People say... 'why is your child deaf, did you fall or something?'...You say no, that's working that's not working...What do you know you are not a doctor! So I'm tired of explaining to people...if I say something they want to say otherwise...and that tires me"*

C16: *"They think a lot of the time if the children can't hear they are dumb...my one friend said to me she will never go to school and you will now have to look after her for the rest of your life. Then I said now I don't have to... Now a lot of people think if you are deaf, then you don't have a future"*

It follows then that there are social consequences of disability regarding the awareness and attitudes of the public. Sometimes overtly, sometimes unintentionally, society discriminates against people with disabilities (Committee of Inquiry, 2002). Once again, the tremendous need for increasing awareness regarding deafness and disability became apparent. Guthrie and Sait (2001) reported however, on the finding that at a National Government level, departments have done very little to create public awareness, or to develop comprehensive strategies for awareness on disability issues. Ultimately, failure to create public awareness may well contribute to the exclusion of people with disabilities. The need for awareness complies with the social model of disability in that deafness and its implications regarding communication need to be considered in the socio-cultural context.

C10: *"...to have a deaf child is not a scandal anymore, it has been hidden all these years...it was always said if your child is deaf you can't mix with the community, you get pushed away...like if your colour is not right then you can't be in the community"*

C16: *"...a lot of people are too shy to be seen with deaf people...They can't talk because they never had the...training or their parents were maybe too shy to bring them out into the public...There are a lot of children who are deaf-mute but the parents keep them inside the house because they are too scared about what the people will say about the hearing loss"*

C10: *"...came to me and said she's rude, she doesn't have a way of greeting people"*

Penn et al (in process) highlight the need to raise public sensitivity and consciousness of South African Sign Language and the situation of the deaf. Rather than devalue per se, responses of the community may well be as a result of a lack of information and

awareness regarding deafness and issues relating to access to communication through the medium of sign language. While some of the caregivers remained silent in spite of devaluing comments, negative attitudes and responses to the Deaf child appeared to encourage many of the caregivers to create awareness. Awareness was reportedly being created regarding deaf individuals, their integration in the hearing world, and communication strategies useful in interaction with their Deaf children. Such a positive response further indicated a value perspective. The nature of the programme components was believed to contribute towards caregivers being empowered to share information with others in order to create awareness.

C16 *"I didn't know they* [Deaf] *get up to high school education until I came here...that's why I know people are not informed enough about deafness...a lot of people...just think they are deaf and dumb end of story.. they think that the children will never be able to get anywhere in the world"*

C13 *"...so hidden like they've always been...and that people at least can know children who are deaf or people who are deaf and that they can have functions so that we can communicate more with one another...I think if they can show more programmes on TV so that people can understand that there are also people who are deaf or who can't talk"*

6.2.3 Support

Indeed, responses of devalue necessitate the need for some form of **support** for the caregivers. Kerr and McIntosh (2000) emphasize the importance of social support – information and other resources – for families of children with special needs. Specifically, social support may serve as an effective safeguard against the stress and isolation typically faced by this population. Social support may then be regarded as a coping pattern that is related to greater adaptation.

Social support was found to be associated with lower levels of stress among parents of young deaf children, and with the interaction style of hearing mothers of deaf children (Meadow-Orlans, 1994 and Meadow-Orlans & Steinberg, 1993 in Calderon & Greenberg, 1997). The necessity of support and the variety of sources of support for the caregivers were evident in the focus group discussions. The tremendous support derived

from the parent-training service and programme components is discussed under the theme regarding the service in section 6.4. Some support derived from the programme is introduced here, such as school placement in educational advocacy, while the focus is on support that is not directly related to the programme. Table 6.3 depicts the various sources and types of support and these are discussed below.

Table 6.3: Sources and Types of Support

Source of Support	Type of Support
Family	▪ Emotional
IsiXhosa Culture/ Traditions	▪ Caring for deaf child ▪ Seeking solutions for child's condition
Friends	▪ Emotional ▪ Financial
Various members of community	▪ Financial ▪ Emotional ▪ Communication means
Supernatural	▪ Spiritual
Church	▪ Spiritual ▪ Emotional
Prayer	▪ Spiritual ▪ Emotional
School	▪ Communication & Sign language ▪ Information

Key:

- Family
- Community
- School
- Culture/Tradition
- Supernatural & Religion

Table 6.3 indicates the support for caregivers obtained at the levels of the family, culture and tradition, the community, the supernatural and religion, and the school of the Deaf

child during the course of the intervention programme. In most cases, a combination of sources or types of support proved to be helpful.

All of the sources and types of support discussed as well as the attitudes and issues of acceptance identified in the thematic analysis revealed the coping strategies used by the caregivers. For example, the discussion thus far has pointed out that acceptance of the situation helped them to cope. The themes regarding socio-economic factors and the parent-training service will highlight, among others, the importance of socio-economic support, information on deafness and communication, and parent-to-parent support as determinants of caregiver coping. These forms of support and others were provided in the intervention programme and are discussed in depth in section **6.4**.

According to Hintermair (2000) emotional support has been pinpointed as an essential form of support for parents of hearing impaired children. A general trend identified in the thematic analysis was that **friends** and **family members** provided emotional support to the caregivers.

C14: *"...I have a lot of support. I have my parents who help me, my mother-in-law, my friends, a lot of people. That's why I feel I'm not alone, and* [child]*...a lot of people like him...that's why I don't have problems with him"*

C16: *"The support you receive from your family and your immediate friends is actually what keeps you going"*

C8: *"It would have been difficult to accept it if it was not for the other people* [in the informal settlement]"

The general trend for the Coloured group of caregivers was to seek emotional support from friends as well as family. Few of the isiXhosa caregivers sought emotional support from family and community members. Similarly, Fisch (2001) identified that it is common in the isiXhosa culture to not bother parents or family members with personal problems, since they are respected figures. In this study, support from friends was typically in the form of loaning money, for example to cover transport costs to access intervention. Personal matters were not typically revealed to isiXhosa family or friends.

The issue of financial support is addressed further in the themes regarding low socio-economic status and the parent-training service.

C9: *"I also go to my neighbours* [with personal matters], *or to my sister-in-law because I stay with her"* ... C9: *"I also go to my next door neighbour"*

C7: *"I don't talk about my problem to my neighbour. I'm borrowing money, that's all...Even at church you don't just talk about it in public"* ... C1: *"You go to a person when you have money problems but you won't always talk about your problem to her. You keep your problem to yourself"*

A **traditional/cultural influence** for the isiXhosa caregivers regarding the **paternal family** was highlighted regarding numerous aspects of caring for the Deaf child. According to Mafuya (2001) the paternal family has authority for the wellness of the child. Cultural respect for the child's paternal family was evident in the isiXhosa caregivers' interviews even though these caregivers sometimes rejected particular forms of support. An example of an instance reflecting respect is that of the child who is beyond potty training age and who continues to have potty training incidents. This is perceived as a problem to be addressed by the paternal family who may in fact need to carry out a traditional ritual.

C9: *"You should take him to his paternal family"* ... C5: *"What is needed is calling a member of his paternal family to scold*[16] *him"*

Caregivers' comments reflected on issues that are compounded by the deafness of the child. In this regard, it will become apparent in the following discussion that the isiXhosa traditional and cultural beliefs and practices are a form of support yet seem to render a conflict in that they were not always applied by the caregivers in this study. Whyte and Ingstad (1998) argue that traditional beliefs are significant in shaping the situation of people with disabilities and their families.

C1: *"...people who say he is never going to hear or speak. Some say why don't you ritualistically send him to his paternal family home...maybe the traditional customs is what he needs...It becomes difficult for me because at his paternal home my child doesn't have a father. At his paternal home they told me that their children, even if it*

[16] The term 'scold' in relation to the paternal family implies that a member of the paternal family is intervening for the good of the deaf child.

is their son's children, are unable to stay at other people's homes. They have to stay in their home...It is worse now that he is like this. I would not like for him to go and stay with another person because I won't know how that person will take care of him"

C4: *"I don't want her staying at her paternal home...they stay far away. I don't think they know about this problem. Some people think this is a tradition issue...Sometimes I believe it and sometimes I do not. What makes me not believe it is that she does not give me problems with other things at all"*

Moreover, a disparity was identified between traditional isiXhosa beliefs and the views of the isiXhosa caregivers regarding a possible solution to the child's condition and seeking support from traditional or spiritual methods. Even though the family and community were pressurizing these caregivers into following traditional and spiritual options, a cultural influence was rejected. The caregivers were clearly burdened by such an influence.

Unlike the isiXhosa caregivers, their families generally preferred traditional explanations and solutions for the deafness of the child. However, these caregivers were found to explain cause in terms of God's plan rather than in terms of traditional factors. They in fact showed a preference for Western forms of intervention (e.g. hospital, and communicative intervention programme) over traditional methods. Similarly, in a study of African families (Serpell, Mariga & Harvey, 1993 in Kalyanpur, 1999) it was noted that families who attributed a condition to an act of God were more likely to seek help from a modern medical facility. Those who believed in the involvement of spirits were as likely to visit traditional healers as a medical facility.

C1: *"...there are people who believe that and say that I must consider going to take him to a Traditional healer, you see maybe it is because of evil spirits that are causing this child to be deaf"*

C4: *"I never thought that I should take her to the Traditional healers. I have accepted it but they* [community members] *say that I should take her"... "We are satisfied with what we learn here* [at Parent-training service] "

C6: *"We didn't even think about the sangoma option"* ...C1: *"I never thought about that one. In any case, they bore more because of their cunning ways"*

Additional **cultural** influence concerned a **religious/spiritual** form of support, namely faith healing that was recommended to the isiXhosa caregivers. Once again, the conflict in the support offered was evident. One of the caregivers in fact made use of faith healers but little respect for religious methods was evident since they brought about no change in the child's condition.

C5: *"I never considered those things, there were not even suggestions that he should be taken to faith healers and so on. When it became apparent that he has this thing, he was taken to* [name of tertiary hospital]*"*

C9: *"My mother-in-law said that holy water from the church must be put into her ears and I said 'No, the doctor said the ears must not be fiddled with' "*

C9: *"...they said that I must take her to church because there was someone who was not able to speak...that was taken to the church faith healer and then was able to speak. But I did not take her there"* ...C8: *"Mine too, there were people like that but I told myself that it is not the case for me...because God made this for me"*

C1: *"I eventually took my child to the faith healer but I never believed in that because this person said that the pastor would explain his problem. He put his hands on his head and prayed and said he is already hearing, and I thought no... "* ...C4: *"He is lying"* ...C9: *"He was only prayed for?"* ...C1: *"He poured something like oil on him...I thought no, I never did it again"*

Religion and a **supernatural** element as a source of support were in fact discussed across all of the caregivers. Prayer and church attendance, as means of coping, were identified. There is consistent evidence that religious orientation plays an important role as a coping strategy for caregivers of disabled individuals (Selway & Ashman, 1998). Prayer, church attendance and specific religious beliefs have been identified as sources of support that provide parents of disabled children with hope and strength (Bennett, Deluca & Allen, 1995 in Selway & Ashman, 1998).

C16: *"Prayer, friends and family; that can also help you a lot"*

C9: *"The church...there is no place else"*

C15: *"...help does not come from the person outside the family, it comes from God and prayer and your faith...and of your acceptance of what you have, the fact that your child is deaf...If you accept and you have faith...then there is not a problem"*

Many of the isiXhosa caregivers used prayer and their church in order to address personal matters relating to themselves and their children.

C1: *"Even if you don't go to church, you pray about it"* ... C2:*"You would pray and ask God. The church assists in a lot of things"*

C2: *"I talk about my problem at church when I'm praying"*

Some support was received from hearing members of the respective communities who occasionally cared for some of the Deaf children, and so needed to make use of an appropriate means of communication with the child, namely that of sign language. The interest in and actual use of sign language by **community** members was identified as a tremendous source of support, as was the sign language support offered by Deaf adults directly involved in the intervention process (see section **6.4**). The support, and hence value, provided from members of the community was shown to encourage acceptance of the children's deafness and the implications thereof.

C8: *"Sometimes you leave your child in another person's care. You must tell them that when he is using this sign he wants this particular thing...they always check it* [sign language booklet] *"*

Finally, a source of support during the implementation of the programme was the school of the Deaf child. The educational advocacy component of the programme encouraged pre-**school** entry for the majority of the children (N=13) during programme implementation. In addition to being derived from the programme itself, types of support derived from the school for some of the caregivers included communication and sign language, and information. Information on nutrition and subsequent food aid provided by the school was identified as particularly necessary for the isiXhosa caregivers in view of their socio-economic circumstances.

C8: *"I too used to have the same problem...but now that he goes to school, they will think that they are accusing him because he cannot speak but he just tells me using sign language and I would know all of that...before, he would encounter the same problems because he really could not explain what was happening"*

C8: *"We are happy that they are well looked after at the school. They even check things like the child's weight...so they wrote to me about the health people that*

were there and said that he is underweight...so then he will be on their feeding programme. So I'm glad about that...maybe if he was there in the township he would not even have been checked by the health workers...Everything they say is important. I am pleased with the school"

6.2.4 Future Expectations

C12: *"...it depends on the parents to also contribute towards the child's future. It's the same as for a child that is normal hearing"*

An optimistic attitude towards the child's future may bring about greater acceptance of the situation (Taanila, Syrjala, Kokkonen & Jarvelin, 2002). A tremendous sense of value was evident in the caregivers' hopes for the future for both themselves and for their children. In general, future expectations were positive. A human rights view (Irlam, 1996) of disability was once again revealed in that the caregivers perceived their Deaf children engaging in the same opportunities as hearing children and indicated that their children should be regarded as equal and positive contributors to society.

C15: *"The constitution says it very nicely that one won't be discriminated against because of your skin colour, language, culture or the disability you have. You will be treated with equal rights...I focus on the country's constitution. I'm not worried I will cross the bridge when I get there"*

C9: *"I see that their lives are going to be the same as the lives of the other children who are able to speak, especially because of the fact that they are at school. It would have been different if they were not at school"*

The importance of education and employment was identified in caregivers' wishes for the future, especially among the isiXhosa caregivers, both for themselves and for their children. In particular, education was identified as bringing about a positive future for the child. Evidently, educational advocacy in an intervention programme for this study population is critical.

Education and employment are well documented as indicators of socio-economic status. Disability bears certain economic consequences and is closely related to poverty in that it makes households more vulnerable to poverty and the effects thereof. Moreover, disabled

people face additional barriers to education, employment and access to basic services (like transport) that conspire to keep them poor (Committee of Inquiry, 2002).

C9: *"I wish for my child to get education and become what she wants to be"*

6.3 LOW SOCIO-ECONOMIC STATUS AND HEALTH SERVICE DELIVERY

A third major theme that emerged from the thematic analysis was that of the socio-economic context for the caregivers, their families and community, and health service delivery in this context.

All of the caregivers raised issues relating to the challenges inherent in their socio-economic situation. Examination of these views collectively allows for an appreciation of the disadvantaged context in which these Deaf children live, and highlights the challenges that need to be overcome if intervention is to be beneficial in this context. Guralnick (1997) reports that interventionists have acknowledged the importance of, among others, contextual factors related to social support provided by family, friends, and the community; the availability of financial and material resources to families; and parenting practices and developmental expectations established through cultural standards. Such factors contribute greatly towards family interaction patterns that influence a child's development (Guralnick, 1997).

Challenges identified include caring for a deaf child in the specified context, poor living conditions, unemployment, access to basic services such as transport, and the lack of accessibility and availability of comprehensive health services. Moreover, the dire need for social security was highlighted.

6.3.1 Low Socio-economic Status

When a child is born with a disability, parents experience the typical stressors associated with parenthood as well as a host of additional stressors unique to their child's condition.

Worries about money, housing, and a lack of support are common causes of anxiety. Significant life conditions such as low income, poor living conditions, a lack of social support, isolation, poor access to services, and poor nutrition may be further related to psychosocial stress (Kerr & McIntosh, 2000). Such life conditions in addition to factors relating to the child's deafness were a reality for the caregivers in this study.

In this context, socio-economic factors and family structure influenced the person of primary caregiver. The context of poverty often necessitates parents seeking employment while family members care for the children. Moreover, the family structure in many families tends to be extended rather than nuclear, and may also be multigenerational. The mother may then not necessarily be the primary caregiver and many children of similar ages may well be in the care of a single caregiver (Louw & Avenant, 2002).

C5: *"I'm not going to be able to explain about [name of deaf child] very well because he was not born by me...I am only going to explain just a bit, his mama would explain it* [diagnosis] *better"*

C7: *"I don't know how she got into* [name of tertiary hospital] *when her mama took her...Her mama was told there..."*

C14: *"...when* [child] *was 8 months I went to work and my husband's mother looked after him"*

Difficulties regarding living in a low socio-economic context were highlighted.

C9: *"It goes like that in those halls. It is just the same in my situation, it goes like that in the shacks"* ...C4: *"You live in difficult conditions...Shew, staying in those halls!"*

C1: *"I have a problem when he goes out..."* ... C2: *"You have to close the door and put down a net or something and put everything there that he can play with...I don't want mine to play outside with those things"*

In South Africa, poor people live in underdeveloped areas in which there is a lack of sanitation, running water, electricity, health services, job opportunities, and educational and recreational facilities (Office of the Deputy President T. Mbeki, 1997). The country faces a continuing challenge of alleviating poverty and meeting basic needs (Committee of Inquiry, 2002). In absolute terms, poverty reflects an inability to afford an adequate

standard of consumption. In this regard, an income level sufficient to afford adequate consumption is used to determine who is poor. The distribution of resources in society that underpin absolute poverty cannot be disregarded. Thus a definition of poverty in 'relative' terms refers to an individual's or a group's lack of resources in comparison to that of others in that society (Committee of Inquiry, 2002).

South Africa's social safety net has its roots in a set of apartheid labour and welfare policies that were racially biased and based upon full-employment. The Committee of Inquiry (2002:15) states that "for a comprehensive social security system, poverty can be defined as the inability of individuals, households or entire communities to command sufficient resources to satisfy a socially acceptable minimum standard of living".

The greater vulnerability as a consequence of poverty tends to result in a continuous exposure to various risks, including unemployment, ill health and disability, which in a way trap people in a cycle of poverty (Committee of Inquiry, 2002). The majority of people with disabilities reside in the most poverty-stricken and underdeveloped areas of South Africa, creating a cycle in which poverty renders people vulnerable to disability and disability reinforces and deepens poverty (White Paper, 1997 in Bhagwanjee & Stewart, 1999). Poverty increases vulnerability to disability through for example, exposure to disease, difficulty accessing adequate basic healthcare, and a lack of information/knowledge about prevention (Pal & Chaudhury, 1998; Committee of Inquiry, 2002). Thus, the poor are at a significant disadvantage in preventing the onset of disability and in ameliorating its effects (Bhagwanjee & Stewart, 1999).

Having a deaf child was reported to be very difficult for the caregivers when living in their low socio-economic conditions. Economic **stress** was identified in terms of unemployment, transportation costs, and the need for social support services. Each one of these issues deserves mention.

C8: *"My child doesn't have a father and I am not working, but I'm making my own efforts. Their clothes are expensive and food for his lunch-box is supposed to be healthy"*

C2: *"No we are not working"*

The loss of a job, or the inability to find one, has a devastating impact on individuals and their dependants. Post apartheid, **unemployment** rates for the majority-population remain high (Committee of Inquiry, 2002). In low socio-economic communities, the issue of disability is set aside as other issues, such as providing adequate nutrition for their children, become of paramount importance. Basic survival is a priority for most of the caregivers in this study in that they frequently raised the issue of food and nutrition.

C8: *"...and food for his lunch-box is supposed to be healthy. When you are buying your groceries you must buy as if you are buying for a White person's child, as they say that the food shouldn't be dry and he must not look like he is needy"... C2: "He must not look needy"*

C8: *"...they* [child's school] *wrote to me about the health people that were there and said that he is underweight...so then he will be on their feeding programme. So I'm glad about that...maybe if he was there in the township he would not even have been checked by the health workers"*

Directly related to unemployment, was the concern of **transportation costs**, particularly in terms of accessing educational and health services, and the need for **financial social support** in the form of a grant. The intervention programme addressed the need for transport money as well as for social security.

C9: *"Transport money is worrying me because my husband is not working. I get money from here* [parent-training] *too...When I don't get it here and I don't have at home I don't come. If I do get the grant money I will come"*

C2: *"She* [parent-training co-ordinator] *would try to help us so that we get grant money...we did not know about that advice"*

C8: *"There is time to take the child to school but what I don't have is money for transport"*

C8: *"I used to pay R10 but now I have to pay R15 from the township to here* [tertiary hospital]*"*

In view of the many socio-economic constraints for the caregivers, the need for social support services in caring for their Deaf children was to be expected. According to the Committee of Inquiry into a Comprehensive System of Social Security in South Africa (2002), social security should be seen not merely as safety nets and as measures to

alleviate poverty, but also as means to promote self-sufficiency and independence. Receiving a social assistance grant was identified as a necessity for some of the caregivers, since most of them and/or their significant family members had no income. Having the responsibility of caring for a young deaf child implies the difficulty in looking for work, particularly being a part of a community for whom employment opportunities are so scarce.

The willingness to accept this type of financial support seemingly contradicts a social model of disability in that the need for financial support suggests that the problem lies within the individual. The striking 'problem' for the children and their families from disadvantaged communities is one of poverty.

C8: *"I have grant money"*

Social assistance in the form of grants is only one form of social security, which in turn is only one aspect of social development. A holistic view of the situation of children with disabilities cannot be disregarded. Rather, all other aspects of their needs and rights need to be considered. For example, attention must be paid to poverty alleviation strategies that lead to development rather than dependency (Guthrie & Sait, 2001).

The intervention programme staff acknowledged the socio-economic disadvantage of the caregivers as well as the communication disability as a result of the children's deafness. Applications were thus processed for social assistance in the form of a care dependency grant.

The care dependency grant is a financial grant that has been awarded to caregivers of children aged between 1 and 18 years with severe disabilities who require permanent home care (Guthrie, 2000). The administration process is fraught with inconsistencies and limitations. For example, there are discrepancies in the assessments due to a lack of clear eligibility criteria and clearly defined terms, such as 'severe disability' (Footner, 2000; Berry, 2002). The current definition of disability is based solely on a medical model of assessment (Committee of Inquiry, 2002; Guthrie, 2000). Eligibility is thus determined on the basis of medical diagnoses. The Committee of Inquiry into a

Comprehensive System of Social Security (2002) has recommended that all disability categories (i.e. physical, mental, sensory and intellectual) should apply and these persons who cannot provide for their basic needs should be eligible for the grant. Additional administrative problems include delays in processing the applications, and the pay-out not adequately addressing the needs of the child holistically (Footner, 2000).

Extreme frustration with the social security system was identified. Either the application process was lengthy or delays were experienced in receiving the social assistance each month. Delays and frustrations are degrading and embarrassing for caregivers (Guthrie & Sait, 2001).

C2: *"It* [grant money] *is inconveniencing us. I found out last week that they wanted money at school. I was forced to try and get the money so that I can pay it at school, and I was supposed to pay for transport, as well as the money to be paid every month. But the money was not at the pay station"*

C6: *"I don't even know that I will ever get it"*

Shortcomings of the social security system in South Africa have been well documented and are being addressed (e.g. Committee of Inquiry, 2002; Guthrie & Sait, 2001).

6.3.2 Health Service Delivery

In addition to poverty, unemployment and vulnerability, the concept of inequality is a socio-economic concept that has particular connotations in social security and health service delivery. The Committee of Inquiry (2002) refers to inequality as the unequal benefits or opportunities applying to social and economic aspects. Inequality between races is a striking feature in South Africa. Apartheid-style prejudice persists in terms of the contrast between those living in poverty and those who are not. Moreover, the inadequacy of current interventions, in a context of persistently high risk and deprivation, has contributed towards numerous challenges. One of these challenges is that of the stark race differential in terms of those who access private services (catering for the better off, who are mainly White) and those who are dependent on strained public services (catering predominantly for the poor, who are mainly Black), (Committee of Inquiry, 2002).

In South Africa, health and rehabilitation services were historically structured in terms of the ideology of the apartheid government. Due to past apartheid practices as well as current financial constraints, health services reaching disabled children that reside in lower socio-economic communities remains a challenge. In addition to a lack of implementation of a primary health care approach, inequalities existed in the provision of services in terms of accessibility, appropriateness, funding and co-ordination, particularly across the variables of race, class, gender and level of urbanisation. Rehabilitation programmes are to be appropriate and accessible, particularly in disadvantaged community settings (Bhagwanjee & Stewart, 1999).

Caregivers voiced their frustration with the current health system and the need for an accessible, more comprehensive system. The lack of availability of services for childhood deafness was identified at community level while the tertiary intervention service of this study was positively acknowledged.

C15: *"...you get sent from pillar to post about the problem you have... There's a lack of communication between hospitals...we are now talking about from clinic to day hospital, then you must still go to* [one of the two tertiary hospitals]. N*o one is willing to do something for you and yet they all fall under one profession"*

C10: *"...at the* [tertiary] *hospital the sister told me that I don't have to come there every time if she's not really sick. I can just go to the* [primary level] *clinic and get something there but... They don't have the facilities to say the child has this wrong or it's that wrong"*

C16: *"As I've already said there are not enough facilities for the deaf. This is the only place I know"*

When families are unable to cope with the care of a disabled child, it may well be a consequence of poverty, lack of support, and lack of knowledge regarding what can be done to improve the situation (Ingstad, 1999). The differing abilities of households need to be considered in term of this context. In this regard, the human and economic resources available, as well as the priorities for use of such resources are to be considered.

C11: *"...I met a woman who stays in* [name of area]. *There everything is far. She says there is a deaf boy...I told her about the parent training that I attend but I don't know how she will do it as it is so far"*

The socio-economic disadvantage of the caregivers clearly influenced access to and the nature of medical intervention sought. With regard to access, inaccessibility of services due to factors such as distance and financial constraints has been well-documented (Arslan & Genovese, 1996; Coyle, 1999). Even though the caregivers acknowledged the importance of taking their children to the various clinics and/or hospitals, they were limited in or prevented from doing so because of the cost of travel and their circumstances. Rafter (2000) obtained similar findings in her efficacy study regarding the use of solar powered hearing aids in South Africa.

C1: *"It is difficult but you are going to try and bring him* [to hospital despite no money] *because you can't leave your child like that* [sick] *"*

C12: *"...we must think more about the moms in the community who don't have the fares to come to* [tertiary hospital]. *One, two, three taxis that you must take, so because I can't get there I will keep my child away"*

C8: *"Crying won't solve anything because most of the time you are not there and meanwhile you have to answer at home and all the troubles are brought to you"*

With regard to the nature of the intervention sought, low socio-economic status cannot allow for costly intervention, such as the fitting of hearing aids and cochlear implantation for children who cannot afford it. In agreement with Penn et al (in process), most deaf people in South Africa are not in a position for the ideological choices offered by the pathological and socio-cultural views, to constitute their reality. Access to the social and economic infrastructure is necessary for the dualistic choice to be meaningful, yet this access is not available to most of the deaf in contemporary South Africa. The so-called choice is thus driven by poverty and economic constraints, rather than by belief or ideology. A meaningful choice is a human rights issue. On the one hand, one's right is to advance linguistically, socially, and economically. On the other hand, having to argue a human rights standpoint when no option exists because of historically discriminatory practices and the impact of poverty on resources, is missing the real gap in offering options (Penn et al,in process).

A cochlear implant was discussed as a possible solution or cure to deafness by some of the caregivers. Once again, the extent of socio-economic disadvantage of the caregivers and their families was highlighted. The large amount of money necessary for cochlear implantation and further rehabilitation may then only be attained through fund-raising efforts or sponsorship.

C16: *"The cochlear implant* [seen as a possible solution], *but they said she doesn't qualify for that because her hearing loss is too bad"*

C1: *"There was someone who said that he could hear if I have the money. There are doctors who are specialists who can make him hear and they said I need R50000"*...C8: *"Where would I get R50000 from now!"*

In view of the foregoing challenges in health service delivery, the transformation of the public healthcare sector to a district based service providing **primary healthcare** (PHC) has been central to the government's provision of healthcare services (Guthrie & Sait, 2001). However, a lack of diagnosis and rehabilitation services at a PHC level was identified in the thematic analysis. Caregivers generally made use of both primary and **tertiary health care** levels in that diagnosis and rehabilitation was necessary at a tertiary level.

C14: *"With the 9 months hearing test he didn't hear and they told my mother he hears...at a later stage my mother-in-law said...there is something wrong... The clinic...told her it is only in the left ear that he is deaf...they gave her a letter for* [tertiary hospital]*...he had a hearing test and they said it is in both ears and then they sent us over to* [name of Centre for Deaf children within tertiary hospital] *and it is since that time that I came to parent-training and then to the school"*

Furthermore, a lack of information was evident at a PHC level. For the caregivers in this study, it was their first encounter in caring for a deaf child. Hence, there were limited opportunities available to gain knowledge in terms of childhood deafness and implications thereof, in addition to the issues relating to access. Receiving accurate factual information has been found to be related to improved health status and family adaptation in families of children with chronic illness (Wyngaarden Krauss & Jacobs, 1990). In view of the differing roles of the primary and tertiary levels, discrepancies were identified in the information provided at a primary versus a tertiary level.

C11: *"the first time I went to the clinic...they told me she can hear...I said she can't hear her name and that's when she went to the other clinic then they sent her a letter for here* [tertiary hospital] *and then they found out"*

C14: *"We came here to* [tertiary hospital] *where we found out for the first time that he can't hear...at the clinic* [primary level] *they told us that it is only in the one eardrum but when we came here to* [tertiary hospital] *they told us it is both ears"*

In addition to a lack of information, feelings of frustration were identified regarding false hope given and expenses incurred.

C8: *"I don't see a point with those places because in order to be clear with our children's problems we have to take them to a hospital. You will go there today and they will say that your child is going to be alright...They will examine him and then you will go to another one. You will have to pay R80.00 but you will eventually see that there is nothing much in that...At the hospital they are the ones who can really examine your child and tell you your child's condition is like this today and like that tomorrow. There is also the help that we are getting regarding deaf children – those things on the ears. We used to just see them on other people, we didn't know what they were all about and that they can help our children too"*

In response to numerous barriers that prevent the success of rehabilitative processes, some progress has been made in the restructuring of the health system according to the District Health System[17] (DHS). The essence of the DHS is the organisation of health care according to geographic subdivisions of a country that are managed through a decentralized management structure. However, the transformation of the fragmented and inefficient apartheid health system into a coherent and unified national health system capable of addressing the health needs of the population, particularly those living in poverty, continues to be a tremendous challenge (McCoy & Engelbrecht, 1999).

The caregivers in this study were dependent on public healthcare and were resident in urban and semi-urban[18] settings. According to Guthrie and Sait (2001) PHC services are almost non-existent to disabled people as their needs are catered for at the district level

[17] The District Health System aims to provide an equitable, efficient and effective health service that is based on the primary health care approach. It is a system of health care in which individuals, communities and health care providers of a defined geographical area participate together in improving their own health (McCoy & Engelbrecht, 1999).

[18] An urban area includes towns, cities and metropolitan areas, while a semi-urban area is not part of a legally proclaimed urban area, but adjoins it (Statistics South Africa, 1998).

and the focus is on human resource development. Community based rehabilitation is not viewed as a viable alternative for addressing some of these needs (Guthrie & Sait, 2001). Although community based rehabilitation should provide the bulk of PHC services, the current situation is characterized by minimal and inadequate coverage, insufficient staff, inadequate facilities and poor referral and follow-up systems (Department of Health, 2001). The situation is exacerbated by the fact that there is no National Rehabilitation Policy (Guthrie & Sait, 2001).

Presently, some Provincial Health Strategies are not inclusive of rehabilitation at a district level. For example, rehabilitation services are currently centralized to specialist hospitals and are not available to people outside urban areas (Guthrie & Sait, 2001).

C16: *"...we stay in* [name of area] *so we can't go to* [name of tertiary hospital] *because we fall under the one treatment area...it works like that...I wanted to see out of inquisitiveness because I met a girl who is also at* [name of rehabilitation centre and school for oral deaf children]"

C15: *"...The clinic in your area should actually be the main centre of information for your child...Our clinics are only there for injections, weighing and whatever...they can be much more than just that...they must have the ability to say there is a social worker or a whatever here, come on that day...then they will do the necessary paperwork to get you there. All the information must be available there"*

In considering the structure of the health services that is in place in light of the post-apartheid situation, one may argue that identification and diagnosis of childhood deafness may well be delayed for reasons relating to the system as a consequence of socio-economic status. Moreover, a lack of information and knowledge regarding deafness and disability may be attributed to the nature of the health services at a primary level in the community. The thematic analysis strongly suggested that at a primary level a lack of identification of disability, rehabilitation for disability, and a lack of information or misinformation might well lead to a delayed diagnosis. Age of identification of hearing loss and age of initiation into intervention services have been found to positively and significantly affect language development (Yoshinaga-Itano, 2003). Descriptions regarding the management process illustrated the time delays in reaching a final diagnosis that was typically provided at a tertiary level.

C8: *"I started knowing when she was one year seven months that he cannot speak...When a child is being called he is supposed to respond and turn his head...When I took him to that doctor* [in informal settlement]*...I told him that I noticed that it may happen that this child cannot hear. So he wrote a letter so that I could take him to* [tertiary hospital]*...here they checked him...and I was told that the child is deaf...and was born like that...they said that I was going to be referred to this place here* [parent-training service] *because he is not going to be able to speak"*

C4: *"I started when my child was beginning to crawl to realize that he was not able to hear. Then I took him to a nearby hospital. They said that I must bring him back when he is 18 months old. I took him...and it was found out that this child is really deaf and he is not going to be able to speak"*

Unfortunately, a comprehensive service that can include information regarding deafness and disability, and allow for diagnosis and rehabilitation, is not currently provided at the district level. The alternative then is a tertiary level service. However, it has been highlighted that the low socio-economic status groups experience major difficulties in accessing services at this level, due to the need for public transportation and yet the lack or absence of financial resources for transportation, and due to the distance and hence time taken to access these services. Access and transport are addressed further at the end of this section and in section **6.4**.

Overall, caregivers' comments indicated feelings of trust in and respect for professionals within a tertiary level institution.

C12: *"And of course he needs help so you have to come* [to tertiary hospital] *for this test and that test every time, the hearing test... then we came for the hearing aids"*

C4: *"I don't think that there is anything that can help her* [to hear and speak] *because the doctors checked her and saw that she can never hear...She was born like that so there is no other help that can be obtained besides the doctors. I don't remember that there is"*

In contrast to the PHC services, it was identified that clear information was provided at a tertiary level upon diagnosis of the children's deafness as well as during the communicative intervention programme in a tertiary setting.

C10: *"...they* [tertiary hospital] *told me exactly where the problem is, that her nervous system from the ear to the brain is dead there is nothing that can be done"*

C1: *"It was here* [at tertiary hospital] *that they told me that my child is not going to be able to hear and is not going to be able to speak...I was told that there is a school and I thought that I'm going to take him to this school"*

C8: *"We are being helped a lot. You come for one problem and also get help for something else. She* [parent-training co-ordinator] *helped us a lot and even now you get to know that we should come together...you are going to get information about maintaining your child's health but when you are there in the townships, there is a big difference for the child who does not go to school because he does not develop intellectually"*

The comments of C1 and C8 emphasize the utmost importance of a good education for the deaf child and the importance of educational advocacy in the communicative intervention programme. C8 felt that educational advocacy would not have occurred in her informal settlement.

Educational opportunities are less available and affordable for children with disabilities, especially those of socio-economically disadvantaged communities (Guthrie & Sait, 2001). Every child's right to education is guaranteed in the Constitution of this country yet disabled children in low socio-economic communities are not typically provided with an infra-structure that can sustain appropriate educational facilities. Up until recently however, deaf children in the Department of Education and Training, including those from disadvantaged communities, have received an inferior education (D. Ogilvy, personal communication, January 2003).

The foregoing discussion has highlighted the differences between primary health services in the community and tertiary services as experienced by the caregivers relating to their children's deafness. Given the socio-economic constraints, problems of accessibility, and the transformation of the public healthcare sector to a district based service, one may expect a caregiver preference for services such as the intervention programme of this study to be community-based as opposed to centre-based. Such a preference was not identified in the thematic analysis.

Overall satisfaction with a **centre-based rehabilitation programme** and the extent of the services offered in the tertiary hospital that housed the programme was expressed. This contrasts evidence of among others, the absence of rehabilitative services, lack of information and of caregiver frustrations with services at the district level, already presented. The caregivers indicated the convenience of a comprehensive service within a tertiary setting. Furthermore, a strong preference was conveyed for attending the programme fitting into a comprehensive tertiary level service, rather than in isolation. Tremendous support was derived from access to multiple services at one site.

C8: *"All of this* [services offered in the tertiary hospital] *is enough as mothers come here to the hospital all the time"* ... C2: *"We do get help"*

C12: *"We are lucky, because we get everything here at* [tertiary hospital]*...but there are maybe moms in the community that attend clinics and so do not actually know about the parent meetings, the special schools and so on"*

Even though the rehabilitation service was housed within a tertiary hospital, a social model rather than a medical model applied. Management of childhood deafness requires an ecological framework and collaboration among highly skilled professionals. It is hoped that the transformation process will continue to break down barriers to rehabilitative processes so that these can be integrated in primary and secondary healthcare settings.

As mentioned above, Guthrie and Sait (2001) assert that community based rehabilitation is not viewed as a viable alternative for addressing many of the needs of disabled people at the district level. There is however, a sense of urgency regarding the need for rehabilitation services at a district level particularly in view of the socio-economic constraints of the typically under-served populations. For what length of time can caregivers and their children attend centre-based rehabilitation services on a weekly basis, given their financial constraints and typically extensive travelling distances necessary to access these services?

The intervention programme is a short-term programme in which financial assistance for transport costs was provided.

C8: *"We are happy... it's the money issue...they are making it easier for us"*

However, financial pressures remained obvious. Moreover, there is uncertainty regarding the sustainability of funding for transport costs particularly without some form of social grant. Social security for disadvantaged families and families of disabled children remains a challenge in the economic and health - particularly relating to HIV Aids - context of South Africa (Committee of Inquiry, 2002). Consequently, socio-economic constraints may be expected to present greater challenges in more **long-term** intervention that is centre-based.

Commerford (2003) entered into an investigation into long-term parent-training intervention carried out in the homes of the caregivers, on the basis of the findings of this study. A preference was identified among caregivers who had previously attended the 12-week programme for the more long-term programme to be community-based. The reasons were severe financial pressure for the families primarily due to unemployment or low rates of employment of adults in each of the homes, and to the care dependency grants money being insufficient to cover all costs for child care including transportation costs to access services. The following excerpts were obtained in Commerford's (2003) focus group interviews with her caregiver participants.

- *"Yes there is this grant money but it is finished quickly...you have no money at the end of the month"*
- *"There are people with problems who are not working and who don't have working husbands to give them money...this child must be fed and clothed and everything from that grant money, and go to and from* [tertiary hospital]. *I don't have the money"*

6.4 THE PARENT-TRAINING SERVICE

C13: *"The sense of togetherness and the stimulating things helped me a lot"*

C16: *"It's fun. We laugh together if we use the wrong sign and we learn together what it right"*

The method of focus group interviews allowed for an examination of among others, caregiver and familial stress, coping strategies and support resources used to manage stress, and characteristics of the family as well as the broader social and economic context. In brief, childhood **deafness and disability** received responses of **value** and **devalue** compounded by factors relating to the **socio-economic context**. Consequently, caregivers sought and made use of numerous coping strategies and **support** resources. The impact of disability on the lifetime outcomes of children can be extraordinarily high, including several barriers to independent living and engagement with society (Committee of Inquiry, 2002). The family environment and the larger social context cannot be disregarded in service delivery (Wyngaarden Krauss & Jacobs, 1990). A great deal of frustration was identified among the caregivers relating to primary **health care services** and overall satisfaction was expressed with the **parent-training service** housed within a tertiary setting.

Findings from the thematic analysis revealed that a tremendous resource of support for caregivers was that of the communicative intervention programme. Support constituted one of the programme components and was in fact offered in terms of the other components of information giving and exchange, development of communication skills, and educational advocacy. Table **6.4** on the following page summarises the support derived from the programme, as identified in the thematic analysis, and this support is discussed in this section.

Table 6.4: Sources and Nature of Support derived from the Communicative Intervention Programme

General Source of Support	Specific Source and/or Nature of Support
IsiXhosa-English interpreter's role	• Cultural sensitivity • Linguistic sensitivity
Parent-training co-ordinator's role	• Provision of appropriate, clear information • Training in communication and sign language • Professional guidance/support • Socio-economic support (e.g. grant application) • Educational advocacy • Counselling
Parent-training Service	• Part of a comprehensive service within a tertiary institution • Communication and sign language • Information • Programme staff (e.g. interpreter & Deaf signing adults) • Group support • Relevance of programme content • Modelling and practice activities • Sign language materials • Age-appropriate programme resources • Problem-solving, Revision, Feedback • Educational advocacy • Socio-economic support (e.g. transport costs)
Caregiver group	• Emotional • Practical

Section 6.4.1 outlines findings identified in the thematic analysis relating to the principles of the programme while section 6.4.2 focuses specifically on the programme components. The principles and components have been addressed to some extent throughout this chapter according to the particular themes that emerged in the thematic analysis. Therefore, it is believed that additional evidence for the findings presented in this section has been provided. This section highlights findings relating to principles and components more in line with the aims and objectives of the programme and specific aspects of the programme

6.4.1 Evaluation according to Programme Principles

With regard to **competence of the comprehensive team** and a **working partnership**, it was identified that a highly committed, suitably qualified programme co-ordinator and the remainder of the team who engage in a partnership relationship with caregivers and whose skills match the needs of the caregiver-child dyads was critical. Seitz and Provence (1990) assert that a working partnership contributes towards an effective intervention. It was further identified that both sign language and communication parameters need to be addressed in a social **interaction** programme that constitutes the first formal intervention programme for the participants. The caregivers acknowledged their need for continued training and support, hence the need for more long-term intervention.

C10: *"Because her* [parent-training co-ordinator] *concern is the same as ours...that's why we are not awkward with her...she knows what we're going through"*

C11: *"I'm also happy I came to parent-training. I'm appreciative of* [co-ordinator]*"*

The principles concerning the involvement of **Deaf role models** and **interpreters** were raised as critical aspects of the intervention. In a holistic approach to intervention, the tremendous **socio-economic pressures** on these families must be addressed through for example, the use of **appropriate programme materials and equipment**, assistance with social security applications and transport costs. Access to one's own language in intervention and support regarding transportation contribute towards accessibility of services and hence the quality of intervention (Abramson, 1990).

According to Abramson (1990) one of the first questions asked in evaluating intervention is that of relevance or appropriateness. The dire need for the communicative intervention programme was identified. Caregiver responses throughout the focus group interviews, to the evaluation questionnaire, and results of the caregiver-child interaction analysis strongly indicate that the programme objectives were applicable.

C11: *"So far everything that we've learnt was or is what we need"*

C12: *"Yes it is actually important for such a programme and we appreciate the fact that there is such a thing"*

With regard to the relevance of the programme for families representative of different races and cultural backgrounds, Louw and Avenant (2002) highlight the presence of cross-cultural differences between speech-language therapists and audiologists and South African families of young deaf children. The professional cannot assume that the families whom they serve share their ideas and beliefs regarding disabling conditions and interventions. As a result of these differences, professionals need to develop **cultural competence** and appreciate the cultural diversity through the services provided to for example, families of young Black children with hearing loss (Iglesias & Quinn, 1997 in Louw & Avenant, 2002).

C2: *"We enjoy her* [parent-training co-ordinator] *running the group as* [name of interpreter] *is there to translate for us the things that she says that we don't understand"* ... C7: *"We do want to know what we are supposed to do"*

Research suggests that the greatest need for interpreters in South Africa is in the health services (Erasmus, 1999). The above excerpt indicates the importance of access to a service that is provided in one's home language. The need for an English-isiXhosa interpreter who has previous experience in interpreting in healthcare and is from the same community as those for whom she interprets was acknowledged prior to the implementation of the programme. It was identified that the interpreter enabled both cultural and linguistic sensitivity. Support derived from the interpreter is addressed further in terms of the component of support.

Caregivers indicated clearly that the fact that the co-ordinator did not represent the same cultural group as those in the parent-training group was not an issue. Of greater importance was the commitment of the co-ordinator.

C15: *"It is about how sincere the person is...it's not about the person's language, his colour, where he comes from...if that person's heart is in the right place...nobody will have a problem with that"*

C16: *"We don't have a problem with the fact that she is from a different race because she is just a person as much as we are...she actually made it possible that we*

could learn to communicate with [name of child]. *We have to be appreciative of her and everybody"*

Evidence was identified regarding a highly committed and appropriate programme co-ordinator minimizing language barriers so as to ensure information transfer. A method of relaying information that is appropriate to the caregivers was identified as a criterion for the success of the intervention. The co-ordinator appeared to be successful in developing a relationship over time with the caregivers based on trust. She had consistent and regular contact with the dyads throughout the intervention process as opposed to a situation with different intervention staff each session. Hence, there was an aspect of **continuity of care**.

C14: *"We've known her for a long time"*

C16: *"...If we didn't come to* [parent training co-ordinator] *then naturally we wouldn't have known anything and it is actually because of her that I at least now can communicate with my child...I'm very appreciative of* [co-ordinator]"

C12: *"I actually like the way she explains things...I never knew anything about this...when I went home I at least knew some sign language"*

Satisfaction enhances the prospects of compliance and is an important additional end-result in its own right (Abramson, 1990). Appreciation of the co-ordinator's role seemed to encourage regular attendance at the service. Comments revealed the positive commitment of the caregivers in attending the programme, and satisfaction with the service.

C1: *"I would say that she helps us and it feels like you must always come"*

C10: *"...nobody will teach you at home so you can give up those few hours to come"*

C15: *"...whether you are Black or Brown or whatever colour, I haven't seen a White person yet but we have the Black and the Brown besides [*the co-ordinator*] who is White...You'll see the same people coming back every week so in other words, what's happening here is good"*

Furthermore, caregivers conveyed their satisfaction with regard to the overall structure and organisation of the programme. In particular, the variety of themes covered in terms of information, and sign language vocabulary and corresponding practice activities,

proved to be helpful. Overall, participation in the programme appeared to be an **empowering** experience for the caregivers.

C14: *"Like this week we do this and next week we're going to do something else. We learn more signs and then we still have a lot of questions we want to ask about the last week's things. It goes on until the whole program is done and then we begin with new things"*

C14: *"Every week it was a different title, like washing or clothing and so on...and I liked the way they taught things. I was always happy to go there with my child"*

6.4.2 Evaluation according to Programme Components

As previously mentioned, service delivery components within an ecological framework in this study included facilitation of caregiver transaction and interaction with his/her child and the development and use of sign language, information giving and exchange that enhance knowledge, support and educational advocacy.

A. Communication – transaction and interaction

C3: *"You had to guess what your child wanted...he would show you what he wanted"*

C16: *"Before it was very difficult because we couldn't communicate with her because she is deaf"*

This situation indicated in the above excerpts suggests minimal meaningful communication between the caregiver and child prior to participation in the programme. Both the importance of learning how to communicate with one's Deaf child, and the improvement in communication with the children as a result of participation in the programme, were highlighted. Improvement was generally attributed to learning sign language and communication skills that resulted in an enhanced caregiver-child relationship, reduced frustration and greater understanding within the dyads. The communication and sign language component of the programme was evidently a resource of support for the caregivers.

C12: *"that's what I'm here for - to learn how to communicate with him"*

C5: *"I can now understand what he wants to say to me and our relationship has improved. If you sign he responds"*

C6: *"The things that we learn here have helped us a lot because before you couldn't communicate with your child but now you can...It is not like before when I was just gesturing or was frustrated when I wanted to say something to her"*

More meaningful two-way communication and fewer incidents of breakdown following the intervention were identified. These findings from the thematic analysis mirror the results obtained from the video-analysis of caregiver-child interactions pre- and post-intervention. Improvement in communication transaction and interaction may well then be a primary consequence of training in sign language and communication strategies. With regard to sign language, caregivers acknowledged sign language as an appropriate method of communication with their children. Note once again the use of the term 'speak' that typically refers to signing.

C6: *"Coming here helped me because I can speak to her now when I tell her something or send her somewhere to fetch something...and she now knows NO when I say NO"*

C3: *"We did not know the signs before. We thought them up ourselves but now I can communicate with my child using the signs"*

C9: *"I am also very happy about the fact that I can sit down with the child and speak to her. But before, I was not able to speak with her"*

C7: *"Now that we can communicate, I know what she needs and how she feels"*

C14: *"The parent training must stay open because if I want to learn another sign then I can come back"*

C1: *"I can touch him gently and speak to him...It has helped me to know what he means"*

With regard to support and training in strategies useful for communicating with the Deaf child, caregivers highlighted the importance of pre-linguistic skills such as AG strategies and eye gaze patterns. Moreover, the use of facial expression in behaviour management, of semantic contingency and age-appropriate methods and materials, were identified as being effective aspects learned in the programme. Since children learn the conventions of conversation through interaction with their primary caregivers, it is necessary for

caregivers to help them develop these pre-linguistic skills (Swisher & Christie, 1989). In addition to communicative interaction during play and other daily activities, improvement was identified in storytelling interactions

C3: *"I've learned that when you want to speak to the child you must touch him gently first and look at him and sign to him"*

C16: *"We use the information they gave us...to get her attention. In the beginning we didn't know. We pulled her hard and then she got mad...we didn't know we mustn't pull her and that we must touch her hand or take an object and show her like that"*

C2: *"It is necessary that you look at him. There is nothing that you can do if he is not looking at you and you know that he cannot hear and you are next to her. You have to pat him and show what you are saying"*

C8: *"He is supposed to see NO and see from your face when you don't like something he is doing"* ... C2: *"and I show it in my face when I'm serious"*

C7: *"We can understand their* [i.e. deaf children] *situation as* [parent-training co-ordinator] *explains that she is still young so when I want to show her a book she shows me that I should touch him and I must do this* [signs *BOOK*] *and show her here in the book. If she doesn't want it I must leave her. If she's doing something I must play with that same thing with her. I must play with things that interest her."*

C3: *"I enjoyed the way she* [programme co-ordinator] *taught us about looking at the books because I find that I can read books with my child, something that I thought would never happen"*

The above excerpts illustrate the extent of the impact of being supported and trained in and making use of a common mode of communication as well as communication and language stimulation strategies. The use of signs has been found to increase communication between parent and child and to reduce stress in families (Swisher & Christie, 1989). The above excerpts strongly suggest a closer caregiver-child relationship made possible by more meaningful dyadic interaction. Child deafness without an adequate means of communication can have a very negative effect on caregiver-child interaction (Wedell-Monnig & Lumley, 1980). The benefits of attending the intervention programme related to the caregivers and the children, bringing about a sense of coping for the caregivers.

C16: *"...I'm happy that [name of child] can at least communicate with us and with everyone...Initially, she didn't want to go to people...but now she goes and we communicate and I feel that because we have her in the parent group both she and us are learning. We have learnt a lot"*

In addition to receiving helpful and applicable information on particular language and communication strategies, the caregivers commented on the importance of the co-ordinator modelling the various strategies during the sessions. The modelling activities proved to be relevant for home use in that some of the caregivers commented that they carried out the same activities at home with their children. The necessity of being relevant makes it important that the information given during sessions be individualized according to the needs of the families and be as practical as possible (Girolametto et al, 1986).

C9: *"It becomes easy when you have seen it from [name of co-ordinator] in games with the children"*

C7: *"We do them"*

Caregivers were provided with opportunities to individualize information given by practising communication strategies and sign language, and receiving feedback. This included for example, evaluation of caregiver-child videotaped interactions, and weekly practice activities using functional interaction materials. Practice activities were reported to be interesting and fun. The caregivers generally appreciated being part of a group, including the children in the activities, and being able to ask for advice and assistance during the sessions. Due to a lack of book-sharing experiences prior to the intervention, an appreciation of the time allocated to 'practising' storytelling with the children was identified. Caregivers benefited from the time provided in the sessions for them to copy and practice the individual signs and phrases and sentences. Moreover, the range of vocabulary themes and sign language 'games' was reportedly enjoyable.

C15: *"It was practical...your application of a thing makes you learn faster than if you had to sit and look"*

C5: *"I learned a lot and enjoyed myself playing games and communicating with my boy"*

With regard to the video feedback in the group on caregiver-child interactions, it was identified in the evaluation questionnaire that this opportunity enabled caregivers to identify aspects of their own communication with their children, and to identify breakdown in their own as well as others' interactions. A rewarding experience was evident for those who viewed their video samples recorded both pre- and post-intervention

C2: *We can see our mistakes for ourselves in the video"*

C3: *"When I compared myself on the second video, I saw a big improvement and I knew most of the things even though she* [the child] *did not know them"*

The caregivers discussed the use of sign language at length as it related to acceptance thereof, practice, and programme materials. Some of the caregivers in fact felt special in that they were learning a language that few people seem to know.

C10: *"it makes you proud as the mother because your child can at least communicate with you and just with you"*

C15: *"You are almost in a privileged position because you can communicate...the feeling is actually nice...it is the same as when people speak Xhosa and you can't understand and...you can then interpret what is being said...then you feel nice you were able to help"*

In addition, greater confidence in learning sign language was identified among the caregivers post-intervention. The primary reasons for increased confidence in learning this new language included the learning of a large number of signs, and being able to form phrases and sentences in sign language. Two of the caregivers explained that learning sign language and being able to communicate effectively with their children together increased their confidence.

C6: *"I've learnt a lot of signs and I make sure that I remember them"*

C16: *"I'm much more confident because she understands me when I sign to her and I understand what I'm talking about"*

Relating to acceptance, sign language was indicated as a true language being learned in addition to the spoken languages already used by the caregivers.

C14: *"they* [people at the shops] *also learn and then next time if* [name of child] *goes into the shop...they always learn to talk with him...therefore it is like a third language"*

C15: *"...like you just said, you now have a third language. It is almost like Xhosa or English or Afrikaans"*

With regard to the sign language materials compiled for the caregivers, the use of pictures for the objects and the corresponding sign language label in the sign booklet served as an effective teaching aid for the caregivers, family and members of the community. This benefit indicates the support derived from programme materials.

C2: *"It* [sign language booklet] *is clear"*

C14: *"...my book travels everywhere and then the people come to me they say it's now this sign then I say no it's not like that it's like this"*

C8: *"Sometimes you leave your child in another person's care. You must tell them that when he is using this sign you must know that he wants this particular thing. You are making things easier for the person. And I got a book from here* [Parent-training service] *on sign language so they always check it out, and myself too if I don't understand something I look at the book"*

The sign booklet was particularly useful to those – many of the Black caregivers – who did not have video equipment at home and could not make use of the sign language video. The video was reportedly a convenient form of presentation, and effectively portrayed a critical aspect of signed languages being that of motion.

C14: *"It* [the video] *is very helpful"*

C16: *"The child can be with you...it's also easier...because they show you the face and then they show you the signs and it's easier for the others in the house as well"*

C13: *"If you have the video then the sign can show move like this or move like that"*

Within the programme, communication resources such as toys and books were found to be age-appropriate.

C16: *"It's mostly children of a similar age who come here. They are small so the books and things used here are things that children of their age will play with"*

Socio-economic factors cannot be disregarded in intervention programmes for families from disadvantaged communities. A lack of resources, including play materials, is typical in this context. As suggested by the programme co-ordinator, many of the caregivers made use of the alternative to purchasing books, being the use of community libraries.

C6: *"We don't have those things* [toys and books]*"*

C8: *"He has toys but they are not enough"*

C2: *"At home we get books from the library...you just go and get them"*...C9:*"I also have books from the library"*

Within the context of socio-economic disadvantage and the past discriminatory practices in the educational system during the Apartheid period, many South African adults attained a low level of education and poor literacy skills. This situation applies to the caregivers in this study. The programme employed measures of consideration in this regard. For example, the delivery of information was primarily through group discussion and modelling, rather than on a reliance on written materials. A booklet corresponding to the content of the information on communication in the programme was compiled and made available, yet was not selected for use by the majority of the caregivers. Even the use of a brief explanation concerning sign production in the sign language booklet was found not to be useful.

C5: *"That book is good and it's in Xhosa"*

C14: *"...the people won't read that there underneath; they will only do the sign"*

B. Information and Knowledge

C6: *"We gain a great deal of knowledge* [from the parent-training group]*"*

Information giving and exchange during the group intervention sessions served to impart knowledge and hence empower the caregivers. Adequate information concerning the child's disability has been reported as a very important determinant of parental coping (Taanila et al, 2002). Topics of the information provided during the intervention included among others, language development of a hearing impaired child, amplification options,

ideas for communicative interaction in the home, and child behaviour management. In view of the nature of these topics relating predominantly to language and communication, evidence of information on this area is indicated primarily in **section A** above.

The sessions aimed to allow for an efficient way of exchanging information. The caregivers conveyed that all information provided was sufficient (C7: *"There is nothing that she* [parent-training co-ordinator] *didn't mention"*), and that the manner of information presentation and discussion in the sessions was adequate (C6: *"We like it"*). Moreover, the interviews provided evidence of opportunities for problem solving through training, as well as revision of information.

C2: *"We like it* [information given] *because you want to understand what she* [deaf child] *can do and the way that you can speak to her"*

C11: "[co-ordinator] *always asks if we don't understand something properly then we can go back to it"*

Information provided in the intervention enabled an understanding of the implications of severe-profound deafness. One of these implications for the children was the need for an alternative to spoken language. Information regarding implications of deafness, the need for the use of sign language, and different sign languages, was found to be very helpful.

C2: *"At* [name of school for deaf children] *there are those deaf children who are able to speak but although they can speak they use sign language. Our children will do the same thing,* [parent-training group co-ordinator] *told us. They will end up not being able to speak well, they will use sign language...I feel very happy because everything that the other children do she also does"*

C2: "[parent-training co-ordinator] *explained to us that their sign from where they come is not exactly the same as ours"*

With regard to perspectives on deafness and disability, information giving also proved to be beneficial in highlighting that a charitable view of deafness is not necessary. An influence beyond the programme itself was identified in that caregivers readily shared this viewpoint with family members.

C16: *"In the classes we now learnt that we shouldn't let them grow up such that they can't do anything for themselves...We mustn't feel very sorry for them...so I also*

always told them [family] *not to always say oh shame to her, because there's nothing wrong with her besides the fact that she can't hear"*

C. Support

C2: *"By coming here you get advice on what to do with your child"*

In view of the overriding support offered by the programme in a holistic approach to intervention, and in view of much evidence of this support already being presented in this chapter, this section focuses on support derived from the programme personnel and the caregiver group.

Trust and satisfaction were highlighted regarding the **parent-training personnel.** In addition to the programme co-ordinator, interpreter and Deaf adults, personnel included speech-language-hearing therapists who were employed within the tertiary hospital setting in the management of deafness.

C7: *"Parent training is also helpful, go to them to help your child...come on your own will for your child's problem"*

C2: *"We have been satisfied"*

Part of the supportive environment created in the intervention concerned the **role of the co-ordinator**, as already mentioned in section **6.4.1**. It was strongly evident that a co-ordinator's role in intervention of this nature needs to include, in addition to addressing language and communication, a high degree of commitment to meeting the wide range of needs of families. This commitment contributed towards continuity of care and a working partnership between the co-ordinator and caregivers.

The importance of the co-ordinator in engendering feelings of confidence, trust and respect regarding her interest, competence and availability was highlighted by the comments of caregivers. An appreciation of the support provided for the caregivers who participate in the service, was identified. Examples of the types of support derived

include the form of information that leads to knowledge and empowerment, counselling, educational advocacy, and socio-economic support.

C7: "[name of co-ordinator] *helps us. If we have a problem she can help with that problem"*

C2: *"There is so much that* [co-ordinator] *has done for us. She also helps us with other things regarding our children like what to do so that they can get into a school. She would try to help us so that we get grant money for the child...we did not know about that advice. The doctors only give you medicine and ... you don't even know what to do"*

C10: *"She was with us before she got married...She's one you maybe go to her with a problem then she...phones you and then she asks you if you're okay and how it feels and all those things"*

The **interpreter** for the programme was a valued, integral member of the intervention team. Not only did she allow for the transmission of information in the first-language of the isiXhosa caregivers, she also allowed for interaction among caregivers and with the co-ordinator, as well as the cultural relevance of the components, materials and procedures of the programme. In this way, the role of the interpreter was primarily one of a cultural broker who assisted in breaching the linguistic and cultural divide between the co-ordinator and the isiXhosa caregivers. Hence, she was a strong source of support.

C2: *"We don't understand them* [those providing information in English or Afrikaans] *but we were helped by the fact that* [name of interpreter] *translated for us and we would understand that when she is saying this she means this"*

Apparent **role models** for the caregivers were the **Deaf adults** who participated in the programme primarily to support and train the caregivers in sign language and to provide information on issues relating to sign language and deafness. Since one of the Deaf adults was a member of the Black, isiXhosa community, she could identify with issues faced by the isiXhosa caregivers in this study. Community participation contributes to the quality of intervention (Abramson, 1990). All Deaf adults were members of a Deaf community.

The support derived from the Deaf role models was found to empower the caregivers. Types of support concerned training in sign language and encouraging insight into deafness and Deaf culture. Sign language mismatch between caregivers and their children

attending a signing school seemed to necessitate caregivers asking the Deaf signing adult for the meaning of their children's signs used. In this way, the frequency of instances of breakdown as a result of not knowing or misunderstanding the child's sign language utterances could be decreased. Caregivers also conveyed a sense of hope and realism regarding communication, coping in society and employment for their young Deaf children who will become Deaf adults like those involved in the programme. Furthermore, caregivers felt encouraged to teach others sign language.

C2: *"...when you do it* [produce a sign] *you would see that you are making mistakes and she* [Deaf signing adult] *would show you that you must do it like this"*

C15: *"As a parent of a deaf child you feel good when you see someone like them working and when you find out about their life"*

C16: *"They were in the same position that my child is now in, so they really understand...they know the signs better"*

The essence of a group intervention was believed to be the support inherent in the group. Mutual support between the caregivers and intervention team has been highlighted. In addition, group sessions aimed to provide a supportive environment in which **caregivers** share experiences and learn from one another. Regular contact with the other caregivers of Deaf children in the intervention group allowed for conversations and the exchange of experiences that proved to be very rewarding.

C3: *"It helps to sit in a group"* ... C7: *"Yes it helps to be in a group"*

C2: *"We want to be as we are in a group"*

C8: *"When we are together like this as parents we get something because when you talk about your problem there is advice because we are together. But if it is only you and* [parent-training co-ordinator] *alone, you would only speak to her and sometimes come out with your problem unsolved. Perhaps you would have told the group and lots of parents can advise"*

In Oka and Ueda's (1998) study on stress, emotional support and coping behaviours of mothers of disabled children, the major source of strength for the mothers was the availability of a social support network. Emotional support from mothers who shared the same experiences was effective for coping with problems associated with acceptance. It

has been suggested that the greatest benefit in terms of stress reduction is achieved when parents (or other caregivers) are able to share and compare their experiences with other parents who are in a similar situation (Matloff & Zimmerman, 1996 in Kerr & McIntosh, 2000). This form of support may lead to a greater degree of acceptance.

Caregiver comments suggested the feeling that caregivers who were in a similar situation were the only ones who could truly 'understand'. Whether meeting caregivers of a slightly older child who had been through their same situational experiences, or meeting caregivers of a child of a similar age, an immediate and intense bond was typically established. Moreover, a realization that the caregivers were not alone was identified. Kerr and McIntosh (2000) who examined parent-to-parent support in coping with a child with a disability obtained similar findings.

C16: "[support] *especially here, this is the only place where the one understands the other one's problem because everyone's child is deaf so here you actually get more support. Especially now with* [another caregiver in the group] *I can now support her because I know how she feels because my child has also been there"*

C9: *"Maybe you have a problem that is similar to someone else's problem, and you don't know what to do but this person will give you advice. I like a group"*

C4: *"if I look at the class's children...one feels good to think there are other people with the same problem"*

In addition to caregiver support specifically pertaining to deafness and acceptance issues, the group provided its 'members' with an outlet for their concerns and with an environment in which stress and its manifestations could be discussed. Such concerns and expressions of stress were received with supportive comments. This finding was especially evident in the focus group discussions. A willingness to share in the group and to offer support indicates the special bond that was formed among the caregivers in the group.

C8: *"...And always talk about it as you have done now...telling us about something that is worrying you"* ...C4: *"So that we can hear"* ...C5: *"These parents have children that are the same as your child, you are not the only one. And they are making you stronger"*

C8: *"You must stand up and be strong"*

C6: *"No, don't worry, we are there for you. You are making me feel the pain as well"* ...C8: *"Don't cry"* ...C9: *"I sometimes cry as well..."*

A further example of caregiver support is that of caregivers explaining or clarifying a particular issue to others in the group discussions. The extent of the bond formed was highlighted by evidence of the caregivers meeting together outside the formal intervention setting following the completion of the three-month programme.

C8: *"What was said about Deaf Culture?"*...C2:*"Because they are unable to speak and so use sign language, they end up following the culture of the Deaf Community...and we* [the caregivers] *said that..."*

C6: *"We thought that we'll get together as we have children who are unable to speak and so we can talk about things and learn to accept things"*

Clearly, the parent-training service comprised numerous sources and types of support. Finally, the component of educational advocacy was particularly important in the context of a history of disadvantage for the caregivers and a need for deaf signing schools for children from low socio-economic communities.

D. Educational advocacy

Programmes designed to enhance the coping skills of families not only focus on parent-to-parent support in groups, but also on the promotion of parental advocacy techniques through which they can develop a feeling of control and competence in securing services for their child. These strategies encourage a more positive perspective on the experience of parenting a child with a disability, and are critical forms of social support (Wyngaarden Krauss & Jacobs, 1990).

The advocacy component of the intervention programme was primarily concerned with the development of an understanding of the educational needs and local placement options available to the children. Programme staff would assist caregivers in the decision-making process regarding placement and in approaching these placement facilities. The

programme co-ordinator arranged visits for the caregivers to the various schools so as to enhance their decision-making process. This type of support was intended to empower the caregivers.

Survey data (Fitzgerald, 1984 in Fitzgerald & Fischer, 1987) collected from parents of hearing-impaired toddlers indicated that knowledge of their child's educational needs was ranked as the highest priority, followed by knowledge of educational options and potential placements.

C2: *"We want them to continue doing that* [providing information on schools for deaf children] *because we didn't know which schools to take our children to, we didn't know"*...C9: *"We only knew that by coming here"*

C14: *"I also got everything here...he's now at school and that's why I don't have a problem"*

Caregivers had been encouraged to actively participate in their children's education. A positive finding was that the caregivers acknowledged their role in their children's education. A starting point was to visit local placement options, which proved to be useful. As pointed out by one of the caregivers, information alone was not sufficient in the decision-making process.

C2: *"As a parent you are supposed to visit there at the school..."*

C16: *"...You need to know the set-up and how it is at the schools for the deaf"*

In closing, the need for early intervention for hearing parents of deaf children has been well documented. Early intervention programmes typically apply to children younger than three years of age (Pakula & Palmer, 1997). This study has clearly indicated the need for training primary caregivers of deaf children considered as young enough for intervention to be classified as 'early intervention' and for those who are beyond this age group. Furthermore, the need for extended intervention beyond this stage was strongly implicated with the continued need for further development of the signing skills of hearing caregivers. A concern regarding the mismatch between caregiver training and knowledge, and the child's education, was evident.

C5: *"We can still learn, there is so much"*

C6: *"Our children develop at school, so if we just sit down and they continue to learn we are not going to know those things that they learn, and they will continue to progress at school"* ... C9: *"because they will be getting plenty of knowledge and ours will be far less if we stop"*

This chapter has presented and discussed the findings of the thematic analysis conducted on the evaluation questionnaire and focus group interview data. In addition to the results presented and discussed in Chapter Five, these findings are believed to have contributed towards a satisfactory evaluation of the effectiveness of the communicative intervention programme. In particular, it is believed that quantitative and qualitative evidence has been discussed that strongly indicates that the aims and objectives of the communicative intervention programme have been met. The following chapter presents the conclusions and implications of this evaluative research investigation.

CHAPTER SEVEN:
GENERAL DISCUSSION, CONCLUSIONS AND IMPLICATIONS

'The last 10 years have been more about putting public services on the ground than quality, sustainability or affordability. That's going to be the focus now and it's going to be more of a challenge than the first round' (Thabo Rapoo, Financial Times, 12 April 2004).

In this chapter, a general discussion of the effectiveness of the communicative intervention programme is presented. Major findings are highlighted with a focus on the four components of the programme, namely communication and language, support, information and knowledge, and educational advocacy. These major findings are discussed within the broader ecological framework of the development, implementation and evaluation of the programme, which addressed empowerment, socio-economic and cultural issues. Finally, general conclusions are drawn prior to the consideration of some theoretical and clinical implications as well as implications for future research.

7.1 General Discussion

The following discussion concerns some of the main findings regarding the four programme components and the tremendous need to address cultural and socio-economic factors in the intervention process with caregiver-child dyads from disadvantaged communities. The effectiveness of the programme is addressed both directly and indirectly throughout this discussion.

The main findings of this study strongly support the assumption that positive change observed across the 16 caregiver-child dyads, over the duration of the intervention, in **communicative transaction and interaction** was most likely due to the intervention itself. Statistical analyses strongly indicated that the observed change in language and communicative behaviours was very likely due to dyadic participation in the programme. Similarly, findings not subjected to statistical analyses were positive in this regard. Furthermore, positive change was supported by the qualitative data obtained on the basis of the evaluation questionnaire and focus group interviews. Particular qualitative support

of quantitative findings was that the caregivers reported positive change in their use of communicative behaviours and sign language with their Deaf children. Their reports were directly related to communication and language aspects addressed in the programme. The component of language and communication is believed to have contributed to the empowerment of the caregivers through contributing towards skills and experience in communicative interaction, and hence access to effective means of communication with their Deaf children.

Some of the main findings on communication through the modality of sign language were as follows. In terms of the four composite variables analysed statistically, significantly increased use ($p<0.001$) of successful attention-getting strategies, eye gaze patterns, cohesion illocutions and to a lesser extent meaning illocutions was identified post-intervention. Evidently, the caregivers developed important pre-linguistic skills to communicate more effectively with their Deaf children through the sign modality. The caregivers also used more communication strategies as language stimulation techniques through an increased use of meaning and cohesion illocutions post-intervention. The magnitude of the increase in use of cohesion illocutions, in comparison to that of the other composite variables, was a particularly positive finding in view of the emphasis on contingency in the interactions, in using a pragmatic approach to intervention.

The significant increase in the use of turn-taking contingency (a constituent variable of cohesion illocutions) amounted to a multiplicative effect of four times the occurrences pre-intervention. Hence, the intervention appeared to have fostered a facilitative conversational style that was effective in enabling a heightened amount of contingent responsiveness. With regard to mode use, marked numerical evidence of change obtained for turn-taking contingency in sign, eye gaze patterns, the physical mode, by means of non-manual features, and visual/gestural means, indicated the greater visual-gestural as opposed to auditory orientation among the caregivers post-intervention.

This then relates to the caregivers' use of sign language following the intervention. Both the word count and utterance count for the signed modality increased post-intervention across the group of caregivers. The caregivers' use of speech without sign language with

their children decreased markedly post-intervention, as indicated by the breakdown data. In addition to the increased use of sign language, evidence of greater sign language competence among the caregivers was identified in for example, the greater variety and combinations of grammatical forms used post-intervention.

Increased competency in the caregivers' use of sign language was noted regarding the amount and interconnectedness of their signed utterances. Yet findings revealed an influence of a hearing person's communication characteristics and that the caregivers were in the initial stages of learning sign language. The increased word count and utterance count identified for the simultaneous sign-speech modality reflected the influence of the communication behaviour that is intuitive to the caregivers as hearing people. Moreover, the content of the caregivers' signed and sign-speech utterances pre- and post- intervention reflected an influence of a hearing person's communication patterns. Examples include the use of signs that may be considered as formal gestures used by hearing people and the iconic nature of many of the signs used. Yet, these occurrences were observed more frequently pre- than post- intervention. In addition, the content of signed and sign-speech utterances suggested the possible ease with which some signs were learned over other signs and the need for an extended sign vocabulary. In particular, the video analysis procedure pointed out the need to address aspects of signed grammar involving the effective use and processing of facial and spatial aspects as well as more complex signed discourse.

The nature of the caregiver communicative transactions highlighted that the intervention was an elementary form of intervention developed for caregiver-child dyads with no previous exposure to formal, communicative intervention. That is, statistical analyses on the constituents of meaning illocutions revealed the increased use of attention-getting strategies and of labelling (i.e. spontaneous naming, descriptive labelling, point labelling). In particular, a stepwise regression analysis revealed that 88% of the total variation in changes of meaning illocutions can be predicted from changes in labelling and attention directives combined. The increased use of labelling reflected a good use of language stimulation while increased use of attention directives indicated the

acknowledged importance among the caregivers of directing the child's attention in the interactions, being aware of the problem of divided attention.

Findings such as these strongly suggest that the intervention programme of this study provided the caregivers with the building blocks necessary for communicative interaction through sign language. In particular, positive gains in terms of pre-linguistic communication skills namely, contingency in interaction, successful use of attention-getting strategies, and visual attunement were identified. The results of the pre-post comparisons of communication transaction and interaction and of the use of sign language are particularly useful in highlighting the critical importance of support and training in pre-linguistic skills and other effective language and communication strategies in addition to caregiver sign instruction.

A further major finding of this study, determined through statistical analyses, indicated that meaning and cohesion illocutions may be viewed as outcome variables while attention-getting and eye gaze parameters may be viewed as input variables. A causal relationship was inferred in that it is possible to give rise to changes in cohesion, and hence to changes in meaning, through addressing and achieving changes in pre-linguistic skills of attention-getting and eye gaze.

In the interpretation of the findings on communicative transaction and interaction it is believed important to differentiate between clinical and statistical significance. The approach of the statistical analysis of communication parameters was as follows:

- To contribute towards clarifying assumptions, methods and expectations in the field of interaction between hearing caregivers and their deaf children,
- To collect data in a specified context and summarise the data in relevant ways,
- To seek numerical evidence for change and for relationships of simple types,
- To explore the inferences that numerical evidence, that is isolated from context, might support, and
- To draw inferences that in some cases match both numerical and clinical evidence, and sometimes exhibit contrasts that may be meaningful.

Rather than a sole reliance on the statistical tests, the interpretation from the professionals in this field is critical regarding the consequence of any change identified. Moreover, the professional needs to be aware of the broader context of intervention, particularly for the purposes of evaluation.

The numerical data of this study were particularly useful in conjunction with their qualitative clinical and theoretical interpretation for the inferences drawn regarding effective change. Validation was sought in the collection and analyses of qualitative experiential data as evidence for effective change and hence clinical inferences could be supported by the numerical evidence for change in indicating an effect for the 16 dyads of this study. In terms of effectiveness, it is believed that the communicative intervention programme was effective to the degree that it improved caregiver-child interaction. The need to focus on the caregiver-child relationship in training is therefore evident.

It is believed that an increase in skill as well as knowledge is necessary to enhance the caregiver-child relationship, to empower the caregivers to feel that they can cope with the disability that deafness has introduced into their lives, and to provide hope for their child for the future. In addition to skills regarding communication through sign language, issues relating to deafness and sign language were embraced in the programme through for example, information giving and the inclusion of Deaf adult role models. In this way, caregivers were provided with a perspective of Deaf culture and sign language.

Since the programme may be regarded as a form of education, all **information** provided to caregivers as well as the information-exchange sessions are believed to have imparted **knowledge**. It is felt that caregiver participation in the programme afforded them the opportunity to gain knowledge and thereby take on an active role in the life of their children (e.g. education, language development). The evaluation process highlighted the lack of information received by the caregivers outside of the intervention programme. Information sharing within a group setting encouraged them to contribute their own thoughts and experiences during the implementation and evaluation of the programme. It is believed that this component contributed towards empowerment in view of the socio-

economic climate and history of disadvantage (including schooling) of the caregivers in this study.

One cannot dismiss the importance of the caregivers' educational level and education history when discussing empowerment. Problems of low self-esteem among the caregivers and the level of caregiver involvement in information- giving and -exchange appeared to be influenced by factors such as education level and education history. Hence, within the delivery of the programme, attempts were made to establish a climate of mutual respect and trust, of collaboration, and support. The mode in which knowledge was imparted, as well as the complexity of concepts and language used in the programme was tailored to suit the educational level of the participants. The delivery of information was primarily through explaining, group discussion and modelling, rather than through reliance on written materials. A written copy of the content of the programme was however provided in order to reinforce what was covered in the sessions.

It is believed that as a result of the linguistic and cultural sensitivity employed in this study, the applicability and richness of information exchange was enhanced. Sensitivity in this regard was incorporated through the reliance on an interpreter representative of the same linguistic and cultural community of the Black caregivers (N = 9). Language barriers for the Coloured caregivers were minimised during the sessions in that the co-ordinator was fluent in English and Afrikaans. Moreover, all programme materials were available in English, Afrikaans and isiXhosa. Additional factors relating to cultural/linguistic sensitivity are discussed later within a broader ecological perspective.

It is believed that parental advocacy strategies that focused on educational needs and placement of the Deaf children encouraged a more positive perspective on parenting a child with a disability. On the basis of the qualitative findings of this study, **educational advocacy** is believed to have empowered the caregivers at least to the extent that they were provided with information on their children's educational needs, on educational options and potential placements. In addition, the caregivers acknowledged their role in their children's education, for example by visiting local placement options and being instrumental in the decision-making process regarding educational placement. The

component of educational advocacy was particularly relevant in view of the past discriminatory practices of the Apartheid regime.

Clearly, the components of language and communication, information and knowledge, and educational advocacy provided **support** to the caregivers. Numerous additional means of support within the intervention programme were identified primarily on the basis of the focus group interview data. It is believed that the support identified through participation in the programme enabled the caregivers to cope better and hence bring about a sense of empowerment.

The role of a multi-disciplinary team of professionals and a team approach by programme staff was to encourage a mutual support network. Such a network was established through the involvement of the caregivers, programme co-ordinator, isiXhosa-English interpreter, Deaf signing adults and other programme staff. As a cornerstone of the programme, the co-ordinator aimed to establish a working relationship with those participating in the intervention. It was identified that such a relationship is one that is based on trust, consistency and time. The co-ordinator needs to be highly committed to bringing about effective change for the families involved and not be viewed as a 'revolving door'.

The interpreter was a valued, integral member of the intervention team whose role was primarily one of a cultural broker who assisted in breaching the linguistic and cultural divide between the co-ordinator and the isiXhosa caregivers. Deaf signing adults who participated in the programme provided support including training in sign language and information on deafness and Deaf culture. Professionals within the tertiary hospital setting enabled a more comprehensive service including for example, involvement of a paediatrician and social worker in the application of care grants and involvement of a clinical psychologist for additional counselling.

Given the numerous factors regarding culture and the socio-economic and socio-political climate, one cannot dismiss the challenge of developing a partnership between hearing caregivers of deaf children who have a history of disadvantage and intervention

professionals, as compared to partnership attempts with caregivers of children from wealthier backgrounds (Webster & Wood, 1989). Given the challenges and concerns highlighted in this study, one can better understand that caregivers who have critical personal needs are often unable to assume responsibility in their children's intervention process.

In addition to the support offered through the role of the co-ordinator, a team approach, and a working partnership, caregiver-to-caregiver support was encouraged by means of a group intervention approach. The essence of a group intervention was believed to be the support inherent in the group. Group intervention allowed for a sense of cohesiveness. A willingness to share experiences in the group and to offer support highlighted the special bond that was formed among the caregivers.

A further type of support that was offered within the intervention programme was socio-economic support. That is, financial aid was provided for caregiver-child dyads to access the programme, and assistance was provided regarding grant applications. Support of this nature was especially important to the caregivers in terms of the wider socio-economic context of this study.

It is believed that the positive findings already discussed regarding the four programme *components* contributed towards the **effectiveness of the intervention programme**. Moreover, the *principles* of the programme, some of which have already received mention, were believed to favour effective intervention. These included parent-child interaction, competence of a comprehensive team, a working partnership, involvement of Deaf adults, cultural competence, appropriate resource materials, empowerment, continuity of care, and consideration of the social and environmental context.

Moreover, the intervention programme was compiled, implemented and evaluated, being driven by needs identified through experience in the field, and by the expressed needs of those participating in the programme. In this way, the programme could be an *appropriate and relevant* form of intervention that is client driven. As a result, a semi-structured approach to intervention was applied as the co-ordinator periodically adjusted

the agenda in following the lead and need of the group of caregivers. The qualitative findings are believed to indicate that the content and nature of the programme was appropriate, given the needs of participants and resources available.

It also became apparent from the qualitative findings that aspects of the intervention programme were relevant to the caregiver-child dyads. Relevance is believed to be a contributing factor to the positive change identified. In particular, the programme is believed to have been relevant and appropriate in terms of the caregiver sign instruction in that sign language training not only focused on aspects of communicative transaction but also emphasised aspects of conversational interaction – in particular, pre-linguistic skills. Moreover, relational aspects were addressed as they concern caregiver-child conversational interaction and parenting principles (including those relating to child discipline, and positive, supportive behaviours). The sign lexicon was selected according to high frequency words used by pre-school aged children and to vocabulary that is relevant to the families participating in the intervention. Overall, the functional approach to language intervention adopted in this study was believed to encourage more meaningful interactions within the home. Of functional importance, caregivers brought some of their home rituals into the programme and these were mirrored in the sessions (e.g. communicative interaction during the daily routine of washing).

In this study by addressing socio-cultural and linguistic differences it is believed that an appropriate and relevant programme in line with a broader ecological perspective was achieved for the caregiver-child dyads in this study. Moreover, certain socio-economic issues were addressed for the families who have a history of disadvantage that interfered with their participation in previous formal communicative intervention. It became clear that the programme could not simply focus on language and communication relating to the child's deafness. A broader perspective in intervention that addresses cultural and socio-economic factors was adopted as a means of encouraging a comprehensive programme. Use of an ecological framework constituting the four programme components, with an overall empowerment perspective, was believed to be applicable in the South African context. Furthermore, this approach offered advantages to deaf children and their hearing caregivers from low socio-economic communities with a

history of disadvantage, in that an emphasis was placed on issues relating to the family, culture, socio-economic status, social attitudes, empowerment and a working partnership relationship between the caregivers and professionals.

The foregoing discussion has addressed the main findings across the four programme components, and has highlighted some of the main factors believed to have contributed towards programme effectiveness. From a broader ecological perspective, additional findings relating to aspects of culture and the socio-economic climate for the families from disadvantaged communities will now be discussed.

The need to focus on attaining **cultural** competence was critically important in this study. Cultural factors that were considered included among others, the family structure, caregiver-child interaction patterns, education level of the caregivers, home language, child behaviour management, and health beliefs and practices. Working effectively with the caregivers from different cultural groups was developed primarily through the use of an isiXhosa-English interpreter from the same community as the Black caregiver-child dyads. It was identified that the involvement of the interpreter encouraged cultural and linguistic sensitivity. The thematic analysis revealed that commitment of the programme co-ordinator was important to the caregivers rather than her representing the same cultural group as that of the dyads.

Cultural/linguistic sensitivity was further incorporated for all caregivers in that Deaf signing adults from the same communities as the dyads were involved in programme implementation, research assistants from the same communities as the dyads were involved in programme evaluation, and programme materials were available in English, Afrikaans and isiXhosa. Socio-cultural sensitivity for the Black caregivers was incorporated in that the Deaf adult who played a primary role in service delivery was a member of the same community. Deaf signing adults played an integral role in this study. There are believed to be valuable implications for the research process and the hope of caregivers and their families when deaf adults are involved in all stages of intervention. Those research assistants who were from the same communities as some of the dyads could identify with cultural differences. Programme materials were available in the first

language of the caregivers, and the reality of education history and poor literacy skills was addressed. It is believed that such factors contributed towards the quality of the intervention programme.

Numerous challenges were identified primarily on the basis of the focus group interviews that need to be addressed if intervention is to be beneficial in a context of low **socio-economic status**. The programme of this study fully acknowledged the socio-economic context of the programme participants, a context characterised by among other elements, poor living conditions, unemployment and difficulties in accessing basic services such as transport. Some socio-economic support was offered to programme participants. In particular, information on care dependency grants and assistance in applying for grants were provided in response to identification of the dire need for a social assistance grant. Caregiver reports indicated the tremendous support derived from the programme in terms of care dependency grants in spite of their extreme frustration with the social security system. Furthermore, financial support was provided for the cost of travel in order to access the intervention service. Additional support included the free provision of programme materials to caregivers who were unemployed. Furthermore, picture books were made during one of the group sessions as part of the emphasis on storytelling, rather than caregivers needing to buy books.

It is believed that consideration of this low socio-economic context will determine the importance of rehabilitation in terms of the general socio-economic climate as well as influence the impact of the services to be provided. In acknowledgement of the need for formal rehabilitation services for deaf children and their families, more services are likely to be established and maintained if they become the collaborative responsibility of numerous sectors. The well being of the deaf individual is reliant on the involvement and responsibility of numerous sectors. For example, support and commitment is necessary from the health sector as well as social services (e.g. with regard to grant applications and transport) and from the education sector in encouraging opportunities for the deaf signing child.

Within rehabilitation programmes, the complexities and challenges arising from low socio-economic conditions cannot be underestimated and professionals are urged to consider both socio-economic as well as socio-cultural aspects in the delivery of rehabilitation programmes. Furthermore, it is strongly believed that in providing rehabilitation for deaf children from financially disadvantaged communities, the type of rehabilitation offered and the costing thereof needs to be seriously considered. From the outset of this study and the development of the intervention programme, the acknowledgement and recognition of the importance of adopting sign language as the primary mode of communication was not only guided and influenced by the socio-cultural perspective of deafness but also by the reality of economics.

The use of advanced technology and methods of rehabilitation facilitating spoken language in the deaf child is extremely costly for individual families and for the state. Within the South African context, there is currently no formal budget for the provision of hearing aids or cochlear implants for hearing impaired and deaf children. Hence, the need to employ appropriate forms of rehabilitation within the financial restraints of the families concerned and in line with the state's health budget is fully recognised. Therefore, the promotion of sign language in rehabilitation programmes for deaf children is considered not only important from a socio-cultural perspective of deafness but is also considered an economic necessity.

As idealistic as it may be to have a clear-cut option between the pathological and socio-cultural perspectives on deafness, the majority of deaf South African individuals do not actually have an opportunity to make this choice that is driven by poverty and economic constraints. The inaccessibility to economic and social infrastructure required to make this choice is a reality to many. Hence as noted by Penn et al (in process) a third perspective is proposed, one that is grounded in the socio-economic framework of the country. The socio-economic context for the traditionally disadvantaged families including a deaf child impacts greatly on the issue of a meaningful choice regarding language and deaf identity. Within this context the choice is not dependant on belief but on economic constraints (Penn et al, in process). Communication development through sign language is indeed believed to be the only viable option for these children.

In acknowledging the extent of the reduced opportunities available to the caregivers and children in this study, the socio-economic perspective on deafness was particularly relevant. Once again, the impact of socio-economic factors on disability cannot be disregarded.

Out of the measures taken to offer socio-economic support in this study, accessibility is felt to be a great challenge in intervention for disadvantaged families. Caregivers voiced their frustration with the current health system and the need for not only a more comprehensive system but also one that is accessible. This raises the contentious issue regarding provision of intervention, such as the programme of this study, in an institution at a tertiary level versus in the community. The researcher acknowledges the need for geographically local services and support for socio-economically disadvantaged people, in order to make services more accessible and affordable. However, rehabilitation services as part of the PHC approach continue to face challenges in terms of accessibility, appropriateness, and equitability and so it will take some time to address these challenges.

Currently, disadvantaged families need to access health services at a tertiary level that is not available in their local community and as the findings of this study highlight they need financial support for this to be possible. Financial assistance may be offered in the form of transportation costs as in this study, but also by means of transport services being specially arranged for families.

An intervention programme such as the communicative intervention programme of this study needed to be a multi-disciplinary, rehabilitation service that acknowledged the complexities involved in intervention for the young deaf child. This was possible in a tertiary hospital setting while still applying a social rather than a medical model. The programme principle of competence of a comprehensive team is particularly relevant in this regard. It is believed that a team of professionals was able to provide a more comprehensive service for the Deaf children and their caregivers as opposed to a single

professional. In addition to other previously mentioned team members, a social worker, paediatrician and psychologist played an integral part in the intervention service.

Overall satisfaction was expressed with a centre-based rehabilitation programme and the extent of services offered in the tertiary hospital that housed the programme. The caregivers indicated the convenience of a comprehensive service housed within a tertiary setting and a strong preference was conveyed for participating in the programme that fitted into a comprehensive tertiary level service, rather than in isolation. Tremendous support was derived from access to multiple services at one site. It is proposed that this short-term intervention remains at a tertiary level and that problems of accessibility are addressed in order to encourage sustainability of such services.

There is however, a sense of urgency regarding the need for rehabilitation services at a community level in that socio-economic constraints may be expected to present greater challenges in more long-term intervention that is centre-based. Evidently, the development, implementation and evaluation of a communicative intervention programme such as the one of this study are indeed bound by the wider context. It is believed that this study has highlighted that the socio-economic and cultural context in particular cannot be disregarded.

For a first time intervention programme, it is believed that there are a number of benefits to implementing and evaluating a centre-based tertiary level intervention programme. It is hoped that ultimately the programme can be implemented in the community in which the deaf child lives. For this to be possible support from multiple professionals is necessary and services responsible for identification and rehabilitation need to be established and sustained. Until such time that adequate, comprehensive health care services can be provided at a community based level, it is proposed that more long-term intervention, in the form of support and further development in communication through sign language, be provided in the community. Issues relating to culture can be addressed both in short-term and long-term intervention, primarily through the use of interpreters and deaf adults from the communities of those participating in intervention.

Finally, it is believed that the hearing caregivers of Deaf children were empowered through their participation in the programme. It is believed that this was achieved by means of the programme components and principles as well as the holistic approach to intervention that addressed aspects relating to the cultural and socio-economic context.

7.2 General Conclusions

In conclusion, this study set out to determine the effectiveness of an intervention programme, within an ecological framework in a developing context, which involves parents through parent training adopting a parent-child interaction approach to intervention, specifically for hearing caregivers of profoundly deaf signing children from low socio-economic backgrounds.

This study has reported on an under-served and under-researched population, namely hearing caregivers and their deaf signing children from socio-economically disadvantaged communities in South Africa, within a broad socio-political framework. Furthermore, an intervention programme developed, implemented and evaluated for the purpose of applicability to this population is reported on in this study. The complexity of deafness and management for the deaf child and his/her caregiver in a low socio-economic climate was appreciated in an attempt to determine the effectiveness of the programme. An intervention that focuses on the training of caregivers primarily through caregiver-child interaction, on information -giving and -exchange, on sign language instruction, on educational advocacy and support, was compiled, implemented and evaluated. This was achieved by means of the programme components of communication and language, information and knowledge, educational advocacy and support. In addition, important issues were addressed relating to deafness, culture, and the social and economic environment of those families who participated in the intervention process. The principles of the programme were also believed to favour effective intervention.

The framework of this study was built upon several basic premises, as follows. Language and communication relating to the child's deafness cannot be addressed in isolation. Rather, caregiver-child interaction in terms of a relationship-focused approach to

intervention and the broader context need to be addressed. In line with characterising relationships between individuals and their environments as transactional and the influence on child development, a naturalistic approach with an ecological perspective was adopted. A holistic approach involves consideration of the broader cultural and socio-economic context, and needs to incorporate programme components of the development of functional communication skills and the use of sign language, information and knowledge, educational advocacy and support. Such components encompass an overall empowerment perspective. Furthermore, the valuable role of deaf, signing adults as role models in the intervention process cannot be disregarded in a socio-cultural perspective on deafness. The involvement of interpreters is critical in enabling linguistic and cultural sensitivity. These basic premises were examined by means of an evaluation process.

It was established that a whole-programme evaluation was critical, one that does not simply address language and communication but rather the wider context within a backdrop of multiculturalism, multilingualism, and transformation in health, education, welfare and other sectors. In this way, a greater understanding of and appreciation for the complexities regarding deafness and disability from a socio-cultural perspective were highlighted. The unstructured method of focus group interviews, in particular, in evaluation allowed for the collection of rich in-depth information. Such information is considered valuable in view of the need for experiential data rather than merely quantitative data on disability.

On the basis of the overall findings of the evaluation, using outcome measures of language and communication, the evaluation questionnaire and focus group interviews, it is believed that the aims of the study and the specific goals/objectives of the programme were achieved. In particular, it is believed that the primary outcome indicating that the specific goals/objectives were achieved, is that the style of caregiver-child interaction changed over the course of the intervention. Hence, the programme was effective to the degree that it improved caregiver-child interaction. The focus group interviews enabled the collection of data on caregivers' experiences with, and assessments of, the programme as a basis on which to judge the extent of the programme's success in

meeting its specific goals/objectives. Interview responses assisted in validation of the programme. On the basis of the findings, it is believed that this study contributes to evidence-based practice in rehabilitation services, where there is a lack of formal intervention programmes for hearing families and their deaf children from disadvantaged communities, and a lack of formal evaluation.

It is believed that in applying a holistic approach to intervention rather than solely focusing on communication and language, the outcome of participation in the communicative intervention programme provides evidence for change and that this change is most likely due to the programme. The programme is believed to have achieved far more than bringing about a positive impact in terms of communication through the modality of sign language. It is believed that the programme resulted in empowerment of the caregivers to cope better with the broader implications of deafness in a context of socio-economic disadvantage and in a multilingual, multicultural society comprising a majority of hearing, speaking individuals. The overall empowerment perspective adopted in the approach to intervention is in line with a socio-cultural view on deafness in contrast to a view of remediation or normalisation that is adopted in the medical model.

On the basis of the quantitative and qualitative findings, it is believed that the service delivery components of the programme instilled greater confidence in the caregivers in caring for and communicating with their Deaf children, thereby enabling empowerment. The caregivers were provided with access to pre-linguistic communication strategies enabling them to use an alternative, appropriate mode of communication; to communication and language facilitation techniques; to sign language training; to cultural and linguistic sensitivity in intervention; to information/knowledge, support, and educational advocacy. In addition, physical access was encouraged through the provision of financial support for transportation. Cultural, linguistic and physical access to intervention is believed to contribute towards empowerment of traditionally disadvantaged families. An important aspect of the empowerment perspective is believed to be the dedication and commitment of intervention professionals and other programme staff (including Deaf role models). This conclusion on empowerment is particularly positive in light of the past discriminatory practices in health and education during the

years of Apartheid. Empowerment is a tremendous challenge in service delivery, yet it is absolutely crucial to include empowerment in intervention goals, particularly with families from disadvantaged communities.

In this regard, the caregivers developed a greater understanding of the disabling situation for their children in a hearing, speaking environment. As discussed in Chapter Six, participation restrictions, as defined in the ICF (WHO, 2001a), arose in an environment in which sign language was not recognised. Participation in the programme appeared to be largely responsible for their realisation that participation restrictions could be overcome. Not only the caregivers but also the family and community were to be involved in minimising barriers to participation. During the course of the programme the caregivers started to teach others sign language and create awareness of deafness and implications thereof.

Numerous aspects are believed to contribute towards the uniqueness of this study and of the communicative intervention programme. This study is believed to be unique in that the population under investigation was one that is under-researched as well as under-served. Research is limited in terms of communication using sign language by families from disadvantaged communities, including those for whom the home spoken language is not English. There is a dire need for research on parentese/motherese among low socio-economic status groups. Additionally, the study is believed to be unique in that the ecological framework takes into consideration the contextual factors of culture and socio-economics of the developing South African climate in addition to specific factors relating to the child's deafness in a parent-child interaction approach. This framework extends beyond the four programme components to making efforts to address the influence of aspects of culture and even more so, in terms of the socio-economic climate for the families from disadvantaged communities.

With regard to the intervention programme itself, the ecological framework is believed to have contributed to the uniqueness thereof. Factors relating to culture, the socio-economic context and the child's deafness were considered and addressed. The primary focus was on communication breakdown between hearing caregiver and Deaf child and

the support and training necessary in the development of language and communication skills specific to communication with young deaf children. This support and training was provided in group intervention. The group format allows the clinician in particular to impart information in an organised, efficient way and to use teaching aids such as group discussions and video-feedback. The positive language-learning environment is no longer limited to the clinician-child therapy situation and generalisation is to naturally occurring everyday-type activities and situations within the context of low socio-economic status.

As part of an ecological framework, a naturalistic approach to intervention recognised that children learn language and hence communication skills through naturally occurring interactions with their caregivers. Naturalistic methods were employed. Functional communication (e.g. during dressing, washing) as part of a conversational model was an important focus in line with the pragmatic nature of language.

An important aim of the intervention, believed to contribute to the uniqueness of the programme, was to restore and enhance the development of pre-linguistic skills. In line with a more visual as opposed to auditory approach to communication, issues relating to the training in and use of sign language were also addressed. Core to this study was the involvement of Deaf, signing adults – in the implementation of the programme, the treatment and analysis of communication data, and the compilation of sign language materials. Deaf role models, particularly those from the same communities as the caregiver-child dyads, were invaluable in this study, the heart of which concerned the development of the deaf child who uses sign language as a primary means of communication. The critically important role of adult Deaf role models throughout the intervention process was acknowledged in this study, as was the involvement of an isiXhosa interpreter in meeting the need for cultural and linguistic sensitivity.

The programme may be considered as the first formal communicative intervention programme implemented in the Western Cape, South Africa, that incorporated sign language as the primary mode of communication for the deaf child from a disadvantaged community. In view of the lack of formal rehabilitation programmes and the current context of transformation, the programme constituted early intervention – the first formal

intervention following diagnosis of deafness in this particular context. Sadly, the history of rehabilitation services for the deaf implies that this is certainly not early enough. However, the principles of the programme are believed to have contributed towards the effectiveness of a comprehensive approach to meeting the needs of the caregiver-child dyads of this study.

It is believed that this approach to intervention responded to the dire need to tailor services in order to consider cultural issues, the social and economic context and issues of deafness. Such a holistic approach necessitates an ecological framework within the developing context of South Africa that incorporates components of language and communication, information, educational advocacy and support that serve to empower the caregivers of young deaf children. Evidently, a variety of aspects were considered and addressed in this study, and these are believed to have contributed to the uniqueness of this clinical and research investigation. Therefore, the impetus and impact are believed to lie within the use of multiple aspects in the intervention process. These aspects are in fact complex issues relating to the child's deafness, rather than simply relating to a small, limited number of communication strategies.

It is necessary to bring to the fore some important **methodological issues** that arose in this study. Coding procedures in the treatment of data were time-consuming for the number of parameters investigated. Further research in the compilation and validation of a quick, user-friendly checklist is necessary.

Furthermore, use of a control group implicated ethical considerations. A research design that does not include a control or comparison group limits the conclusions, such as those of cause and effect, which can be drawn on the basis of the results. The absence of a control group was in fact the reality of this particular research project, a complication that arose due to ethical issues primarily in terms of ethical justification in depriving a needy population of formal intervention. This needs to be appreciated in light of the serious lack of intervention services at the time of this study. Moreover, the critical period of language development was a great concern for many of the children who had not even been exposed to early intervention in its true sense.

The researcher was cognisant of the implications of using a true experimental design versus a quasi-experimental design and of the reality of ethical issues that arise in caregiver-child intervention that adopts an ecological perspective. These are important considerations in future research. By means of a quasi-experimental design, statistical corroboration for change (as well as qualitative findings) associated with the intervention were identified and presented in this study. With regard to the focus of this study being communication through sign language, it is likely that the programme components, principles and approach to intervention applied in this study contributed greatly to observed changes.

In terms of programme effectiveness, it is believed that the intervention of this study achieved clinical accountability and to a lesser extent scientific accountability by virtue of the absence of an experimental control group. As defined by Simeonsson and Bailey (1991), accountability broadly refers to the documentation that a needed intervention has been provided in an appropriate manner with the likelihood of some desired outcomes being achieved. With regard to clinical accountability, the issue of interest is the extent to which a service is perceived by professionals and participants to be satisfactory and appropriate for the needs of the participants. Scientific accountability refers to empirical evidence that intervention is causally linked to outcomes (Simeonsson & Bailey, 1991).

A further methodological issue regarding ethics concerns randomisation and ethical justification. Since a random sample of caregiver-child dyads was not chosen in this study, the findings of this study cannot be generalised conclusively. However, as mentioned previously, ethical considerations could not be justified regarding randomisation of those in need of formal intervention. Moreover, the aim of the evaluation was not to generalise the findings beyond the particular setting but rather to improve programme effectiveness at a specific time for a specific group of people.

Reliability and validity cannot be disregarded in a study of this nature. Since the focus was language and communication, it is important to point out the time-consuming measurement of reliability carried out on samples of caregiver-child interactions that

yielded a high degree of reliability for transcription, coding and tallying of frequency counts. It is believed that a credible study was achieved primarily through the use of multiple methods of evaluation, the consistency of the programme co-ordinator and her commitment to meeting the needs of the participants. Among others, triangulation strategies adopted in this study are believed to have enhanced the validity or rather authenticity of the research findings. In this way, a qualitatively rich account of how the dyads experienced the intervention was provided. This highlights the importance of differentiating between statistical significance in the sense of discernible numerical evidence, and significance in the sense of clinical implications, in the interpretation of findings in human service delivery. In line with the constructivist-interpretive research paradigm, it is believed that validity in the type of research of this study cannot be fully established primarily because interpretations may vary. The emphasis therefore shifts from traditional positivist/post-positivist criteria of validity to authenticity of findings. The researcher applied numerous means of enhancing authenticity and the reader is encouraged to make judgements on the research carried out on the basis of all that has been presented here.

Finally, it is strongly proposed that deafness should not be viewed in isolation in the conceptualisation, design, implementation and evaluation of a communicative intervention programme in the context of numerous challenges in a developing country. A broader perspective on deafness, disability, and the intervention process is advocated particularly in light of socio-economic constraints, cultural beliefs and practices regarding disability, and social attitudes.

7.3 Implications

7.3.1 Clinical implications

This study has reported on the development of a communicative intervention programme provided by a multi-disciplinary team and other programme staff and offered within a short-term framework. This study has led to the ongoing implementation of a formal communicative intervention programme that continues to date in a tertiary hospital for children in the Western Cape, South Africa. Moreover, this service provides clinical

training to Speech-Language-Hearing Therapy students. Since the programme was a short-term intervention specifically for dyads with no previous exposure to formal intervention, the findings have implications for more long-term intervention. Evaluation of the programme has led to the development and implementation of a long-term intervention programme at a community level as a means of providing continuity of care for those who are dependent on strained public services.

With regard to clinical tools, the contingency coding system that was compiled and used in this study allowed for comparisons pre- and post- intervention of sign language and communication parameters relating to transaction and interaction for the caregiver-child dyads. The coding system for the purposes of this study, served to allow for an in-depth analysis of communication parameters. It is anticipated that it can be modified for clinical use as an effective tool in monitoring and evaluation. A less complex version of this coding system would enhance the efficiency of such a clinical tool.

In addition, numerous programme materials regarding language and communication development and sign language may have wide clinical use in the future for English, Afrikaans and isiXhosa members of disadvantaged communities. At the outset of this study, it was hoped that the programme materials would be used clinically in the future. Currently, the sign language video and booklet continue to be useful resource materials for hearing families including a deaf child. It is anticipated that these materials could also be used to contribute towards a more enabling environment for the deaf child, thereby creating awareness regarding communication through sign language.

It is anticipated that this study will contribute clinically to intervention regarding the delivery process and content of the ongoing programme, particularly in view of the need for formal intervention programmes of this nature for families from disadvantaged communities. In implementing the programme, the advantages of group intervention over an individual approach were evident primarily in terms of the emphasis on communicative interaction and of the support possible in a group approach. Particular methods of training appeared to be successful. These included for example, the use of modelling, role-play and sign language practice activities, practice activities for

caregiver-child dyads during the sessions. Use of a functional approach with an emphasis on communicative occurrences in daily routines and the use of relevant words, phrases and sentences for the child is believed to have wide clinical application. The methods used in this study are believed to be suitable for caregivers who have a history of socio-economic and education disadvantage.

Furthermore, use of a semi-structured approach in following the needs of the group (e.g. information, support, and revision necessary) is believed to have encouraged the relevance of programme content. A progression was followed in addressing particular aspects of language/communication in training, rather than the use of a random sequence of content items to be covered. In this way, there are likely to be clinical implications in intervention programmes that incorporate a range of language/communication behaviours and that involve young children who are not all of the same developmental age. This approach was adopted according to the natural progression in sign language and language stimulation, and age-appropriateness of vocabulary and communication strategies.

It is believed that the findings of this study have clinical implications for those teaching sign language to hearing families and friends of deaf children. This study addressed an important area in the field of education of the deaf child for whom sign language is their first language. The integral and influential role of deaf signing adults in intervention was highlighted. Furthermore, hearing parents and families with deaf children who use sign language need consistent access to effective learning opportunities in sign. The importance of focusing on child- rather than adult- based language and on daily communicative occurrences in sign language instruction was evident in this study.

It also became evident that it is critical that intervention programmes concentrate on parent-child communicative interaction rather than simply sign language instruction to parents of deaf children. It is believed that intervention professionals need to look beyond the teaching of sign language to incorporate pre-linguistic communication skills and language stimulation techniques that are specific for use with young deaf children who rely on a visual-gestural system of communication.

Moreover, there are clinical implications for those delivering intervention programmes in moving beyond the components of the programme to incorporating an ecological perspective. The need to acknowledge the broader context that impacts on the lives of the parent-child dyad, as opposed to focusing solely upon language and communication relating to the child's deafness, became evident in this study. Means of acknowledging this broader context in this study included for example, provision of financial assistance to access the service, assistance in the application of care dependency grants, involvement of an isiXhosa-English interpreter and a multi-disciplinary team of professionals. This study has introduced the need for the involvement of deaf signing role models, interpreters and a multi-disciplinary team of professionals in order to provide a more comprehensive service to deaf signing children and their families. The tremendous need for support and empowerment was highlighted in this study.

It follows that evaluation of a formal communicative intervention programme for caregivers and their children from low socio-economic status communities and from cultures that differ from that of the programme co-ordinator, has numerous implications for service delivery in light of the dire need for a programme of this nature. In addition, the evaluation process is believed to contribute towards outcome measurement in this field in which there is a lack thereof. This study, being compiled, implemented and evaluated in a developing context is believed to have clinical implications in other developing regions and countries.

As professionals and educators we need to accept the critical role that parents play in their child's development and address broader factors that have an impact on parent-child interaction. There needs to be a focus on changing the nature of the service delivery rather than attempting to change the family or the situations in which they live. Parents need to be involved in their children's education and development, and it is the responsibility of professionals and educators to ensure that parents become an integral part of the intervention team.

7.3.2 Theoretical implications

This study reports on a population about which little has been documented; it focuses on an under-served and under-researched population within a developing context. Moreover, it reports on an intervention programme for this population within an evaluation research design. Consequently, it is believed that a better understanding of the needs and concerns of hearing caregiver-deaf child dyads from disadvantaged communities has been created. This information allows for clearer interpretation of needs based on their own experiences, values and priorities.

It is believed that this study has provided additional knowledge to the existing body of knowledge on communicative transaction and interaction between hearing caregivers and their young deaf children through detailed description on the basis of a video analysis procedure and additional qualitative procedures. This description revealed insights regarding the increase in use of many communication behaviours as well as a limited use of certain behaviours. It emerged that certain communication behaviours responded more positively than others in the intervention process for caregivers and their pre-school aged Deaf children. It became evident that early intervention programmes need to focus on pre-linguistic communication skills. Such a focus contributes to establishing the building blocks necessary for communicative interaction through sign language.

Moreover, the findings of this study contributed to a greater understanding of communication breakdown among hearing caregiver-deaf child dyads and the influence of intervention on the frequency and nature of communication breakdown. It is hoped that the results on communication will contribute greatly to the development of hearing parents' intuitive communication behaviours that typically break down, parallel with sign language use.

This study describes aspects of sign language, and the acquisition and use of sign language by the hearing caregivers who participated in the intervention programme. It is anticipated that this type of information, collected on the basis of an inherent evaluation process, is valuable in the areas of communication and language in the field of child

deafness and intervention. In addition, it is anticipated that this information meets the need for the lack of research on the nature of sign language use by caregivers who receive their first formal signing intervention in a developing context.

Since the programme focused on supporting and modifying patterns of caregiver-child interactions, it was possible to analyse the contribution of caregiver-child interaction towards programme effectiveness. It is hoped that the findings are able to contribute towards the body of knowledge on the link between parents adopting interactive qualities that research suggests are associated with child development, and outcomes of intervention.

The findings of this study are also believed to contribute towards a greater understanding of disability in terms of restricted participation for the severe-profoundly deaf child in communication within a hearing, speaking environment. In accordance with ICF (WHO, 2001a), information is provided in this study on those facilitators that encourage functioning in this context versus barriers that bring about a disabling condition. Furthermore, facilitating or hindering factors relating to the social, economic and attitudinal environment are presented and discussed. Once again, the need for a multifaceted approach to intervention became evident.

7.3.3 Implications for future research

Several implications for future research emerged from this study. There is clearly a need to determine the effectiveness of intervention programmes for hearing caregivers and their deaf children. Measurement of effectiveness needs to be an ongoing process for short- and long- term programmes. Outcomes of evaluations may contribute towards improvements of various aspects of programmes as well as the development of additional programmes.

The need for extended intervention beyond early intervention was strongly implicated in this study, particularly with the continued need for further development of the signing skills of hearing caregivers. Examples of implications for long-term intervention are as

follows. Firstly, an investigation into the concomitant improvements in the children's language development from pre- to post- intervention stages may be carried out in order to establish whether parent training has the desired effect/s on child language and communication development. Secondly, the inclusion of parents in the intervention team who have previously participated in the programme may be investigated in determining this use of support in long-term intervention at a community level. Although the need for long-term intervention and support is clear and Commerford (2003) has recently investigated a more long-term parent-training programme, it is well recognised that such intervention frequently does not materialise as a result of a number of barriers.

There is a need for an examination of hearing caregivers' acquisition and development of more complex aspects of sign language, such as facial expression and spatialised syntax, which are included in communicative intervention programmes. This study has focused on pre-linguistic skills.

Further research is also implicated in terms of the need to establish a clinically useful tool that is quick to administer in the analysis of caregiver-child interactions according to a set of communication parameters. The procedures employed in the treatment of video-taped data of dyadic interactions in this study are time-consuming. The validation of a clinically useful tool on the basis of findings of this study requires further investigation. This tool may be in the form of a checklist of language and communication behaviours to be administered pre- and post- intervention. It may be useful to acknowledge the stepwise regression analyses findings regarding contributors to change in the use of composite variables of attention-getting, eye gaze, meaning and cohesion illocutions, in investigations comprising a similar study sample to the one of this study. In this way, a more in-depth investigation may be possible with fewer variables while analysis time would be decreased.

This study presented the critical role of deaf adults in the intervention process. Further investigation is believed to be necessary into the involvement and role of deaf people in the lives of hearing caregivers/families of deaf children, which may extend beyond teaching sign language, providing information on Deaf culture and providing support.

Investigation is necessary regarding the involvement of deaf people from the same community as the hearing caregivers/families of deaf children.

There is a great need for intervention to be implemented and evaluated at a community level in the future. To date, little research has focused on the development, implementation and evaluation of long term communicative intervention programmes for hearing caregivers of deaf signing children in South Africa.

Finally, further examination and documentation is required on the process of empowering hearing caregivers from disadvantaged communities. Moreover, the process of empowerment needs to be investigated in more long-term intervention programmes that are based at a community level - not only empowerment of the caregivers but also of deaf individuals and community members involved in community-based rehabilitation. Empowerment is currently interwoven into every ingredient of South African life. It is particularly relevant in view of the country's history of apartheid and the transformation process. Empowerment, in the context of this study relates to racial issues and cultural factors, as well as socio-economic status variables. In spite of the many challenges faced in the transformation of health and rehabilitation, one should not be deterred from future efforts. Future research investigations that examine empowerment from a broader perspective to that taken in this current investigation and as a primary aim of the study would comply with the critical research paradigm. Unlike this study which spans the positivist/post-positivist and constructive-interpretive paradigms, research in the critical realm is concerned with activist or politicized goals leading to varying degrees of action that ranges from the overturning of specific unjust practices to radical transformation of entire societies (Guba & Lincoln, 2005; Rossman & Rallis, 2003).

'A child doesn't learn to communicate by himself. He learns through involvement with his world. We, his parents, are the largest part of that world, and it's what we do and how we do it that affects our child's opportunities to learn' (Ayala Manolson, Hanen Program: It Takes Two To Talk).

APPENDICES

APPENDIX 1: EXTRACT FROM CAREGIVER INITIAL INTERVIEW QUESTIONNAIRE

The initial interview questions were categorised as follows:
Section A: Background Information
Section B: Birth History
Section C: Hearing
Section D: Language and Communication
Section E: Schooling
Section F: Play and Storytelling
Section G: Socio-economic factors
Section H: Attitudes and Perceptions

The questionnaire included standard case history questions and so these questions are not included in this appendix. Unlike the standard questions asked, the following extract from the questionnaire is from Section **G**, which was particularly relevant in the context of this study.

Section G:
Indication of Socio-economic Status (to complement information from other sections):

G1 Do you (and if applicable, you AND your spouse):

COME OUT **JUST COME OUT** **DO NOT COME OUT**

financially each month?

G2a) Do you (and if applicable, you AND your spouse) earn:

R0 **R0 - 500** **R500 - 750** **R750 - 1000** **R1000+**

per month?

G2b) Where does this money come from?

* wages/salary
* care-dependency grant
* maintenance grant
* other

G3 Employment:

(a) Are you working at the moment? Yes No

If Yes: * what work?

* part-time full-time

* who looks after the child while you are at work?

(b) Do you have previous work experience?
If so, what?

G4a) Where do you live?
* house
* flat
* other

G4b) In what area do you live?

G4c) Do you:
* own
* rent

the house/flat/other?

If neither, who owns it (e.g. Council)?

G4d) How many rooms are there in the house/flat/other?
Please specify what these rooms are (e.g. 1 bedroom, 1 toilet. .)

G5a) How many people live in the home?

G5b) Of these people, how many are:
* adults (> 18 yrs)
* children (< 18 yrs)
* working and earning wages/salary

G6 What was the highest class/standard that you passed at school?

G7 Have you been able to buy your child/children a toy and/or book in the last 6 months?

YES NO

APPENDIX 2: CAREGIVER SOCIO-DEMOGRAPHIC INFORMATION

Caregiver	Age	Relation to child	Home Language	Marital Status	Communication Mode with child	Occupation	Level of Education	Housing	House-hold Size	Monthly Household Income (range)	Nature of Income
1	18 years	Mother	isiXhosa	Married	Gesture; Speech	Unemployed	Grade 9	Aunt's house	N = 4	R500 - R1000[19]	Spouse's salary
2	39 years	Mother	isiXhosa	Married	Gesture; Speech	Domestic worker	Grade 10	Council house	N = 6	R1000 – R1500	Personal wages; Spouse's wages
3	39 years	Mother	isiXhosa	Married	Gesture; Speech	Unemployed	Grade 11	Own house	N = 5	R1000 – R1500	Spouse's salary
4	28 years	Mother	isiXhosa	Married	Gesture; Speech	Unemployed	Grade 11	Own house	N = 4	R750 – R1000	Spouse's wages
5	51 years	Maternal grand-mother	isiXhosa	Married	Gesture; Speech	Unemployed	Grade 6	Rented house	N = 7	R1000 – R1500	Maternal grandfather's salary
6	27 years	Mother	isiXhosa	Single	Gesture; Speech	Unemployed	Grade 8	Informal dwelling	N = 6	R0 – R500	Aunt's wages
7	24 years	Caregiver (friend of mother)	isiXhosa	Single	Gesture; Speech	Caregiver to Deaf child	Grade 10	Own house	N = 5	R1000 -	Salary of child's mother
8	36 years	Mother	isiXhosa	Married	Gesture; Speech	Unemployed	Grade 6	Informal dwelling	N = 4	R 0	N/A

[19] Income is indicated in the South African monetary currency of the Rand.

APPENDIX 2 continued: CAREGIVER SOCIO-DEMOGRAPHIC INFORMATION

Caregiver	Age	Relation to child	Home Language	Marital Status	Communication Mode with child	Occupation	Level of Education	Housing	House-hold Size	Monthly Household Income (range)	Nature of Income
9	22 years	Mother	isiXhosa	Married	Gesture; Speech	Unemployed	Grade 10	Rented hostel room	N = 5	R1000 – R1500	Maintenance grant
10	33 years	Mother	English; Afrikaans	Married	Gesture; Home signs; Speech	Unemployed	Grade 7	Council house	N = 7	R750 – R1000	Spouse's wages; Care grant
11	26 years	Mother	Afrikaans	Single	Gesture; Speech	Unemployed	Grade 10	Parents house	N = 8	R0 – R500	Care grant
12	27 years	Mother	Afrikaans	Single	Gesture; Home signs, Speech	Unemployed	Grade 5	Aunt's flat	N = 20	R750 – R1000	Care grant; maintenance grant
13	55 years	Paternal grand-mother	English	Married	Gesture; Speech	Unemployed	Grade 9	Own house	N = 5	R1000 – R1500	Spouse's wages; Son's wages
14	24 years	Mother	English; Afrikaans	Married	Gesture; Speech	Unemployed	Grade 10	Informal dwelling	N = 3	R750 – R1000	Spouse's wages; Care grant
15	29 years	Mother	Afrikaans	Married	Gesture; Home signs; Speech	Unemployed	Grade 10	Informal dwelling	N = 4	R1000 – R1500	Spouse's salary
16	23 years	Mother	English; Afrikaans	Married	Gesture; Speech	Unemployed (Student nurse)	Grade 11	Informal dwelling	N = 4	R1000 – R1500	Personal salary; Spouse's wages

APPENDIX 3: DEAF CHILDREN - BIOGRAPHICAL AND CLINICAL INFORMATION

Child	Birth date	Age	Sex	Deafness First Detected	Deafness First Diagnosed	Degree & Type of Hearing Loss	Possible Etiology
1	03/03/96	1.9 years	Male	Noticed at 1 year	Diagnosed at 1.5 years	Profound sensorineural	Congenital rubella
2	21/06/97	3.7 years	Male	Noticed at 9 months	Diagnosed at 11 months	Severe-profound sensorineural	Congenital; Not Specified
3	25/05/00	1.2 years	Male	Noticed at 9 months	Diagnosed at 1 year	Profound sensorineural	Congenital rubella
4	17/07/98	2.8 years	Female	Noticed at 10 months	Diagnosed at 1.4 years	Profound sensorineural	Congenital; Not Specified
5	29/08/96	4.10 years	Male	Noticed at 2 years	Diagnosed at 3 years	Profound sensorineural	Congenital; Not Specified
6	07/05/97	4.9 years	Female	Noticed at 2 years	Diagnosed at 3 years	Severe-profound sensorineural	Congenital; Not Specified
7	02/09/99	1.11 years	Female	Not known by caregiver	Diagnosed at 1.1 year	Severe-profound sensorineural	Pneumococcal meningitis
8	20/07/97	3.6 years	Male	Noticed at 2 years	Diagnosed at 2.10 years	Severe sensorineural	Not Specified

APPENDIX 3 continued: DEAF CHILDREN - BIOGRAPHICAL AND CLINICAL INFORMATION

Child	Birth date	Age	Sex	Deafness First Detected	Deafness First Diagnosed	Degree & Type of Hearing Loss	Possible Etiology
9	23/06/98	3.8 years	Female	Noticed at 8 months	Diagnosed at 1 year	Severe sensorineural	Pneumococcal meningitis
10	22/02/95	2.9 years	Female	Noticed at 0.9 years	Diagnosed at 2.2 years	Severe sensorineural	Familial history of hearing loss - child's cousin
11	15/10/93	4 years	Female	Noticed at 2 years	Diagnosed at 2 years	Severe-profound sensorineural	Familial history of hearing loss - child's cousin
12	31/10/94	3.11 years	Male	Noticed at 1.7 years	Diagnosed at 1.9 years	Profound sensorineural	Not Specified
13	21/10/95	2.11 years	Male	Not known by caregiver	Diagnosed at 11 months	Profound sensorineural	Not Specified
14	11/09/97	3.6 years	Male	Noticed at 8 months	Diagnosed at 11 months	Severe sensorineural	Congenital; Neonatal jaundice
15	04/08/96	4.11 years	Male	Noticed at 1 year	Diagnosed at 2 years	Severe-profound sensorineural	Not Specified
16	22/06/00	1.1 years	Female	Noticed at 6 months	Diagnosed at 1 year	Profound sensorineural	Congenital Rubella

APPENDIX 4: DEVELOPMENT AND IMPLEMENTATION OF THE COMMUNICATIVE INTERVENTION PROGRAMME

A. Specific Goals and Objectives of the Intervention Programme

A1. Goals

The communicative intervention programme has four primary goals as follows:

a) To provide hearing caregivers with skills and experience to maximize language learning opportunities and bring about more meaningful, pleasurable communicative interaction through use of interactive strategies and sign language, in everyday activities. It was hoped that this would firstly, encourage a quality linguistic environment in the home, where language learning experiences are at an optimum, and secondly, encourage intervention to become a continual and ongoing process, as caregivers learn how to incorporate language facilitation into the child's everyday life.

An additional proposed implication included the facilitation of the deaf child's participation in extended dialogue and hence attainment of contingent information for the children that would promote their expressive and receptive skills. Greater contingency in interaction positively influences social-emotional and behavioural development (see Spencer & Gutfreund, 1990).

b) To provide support for caregivers who have a history of disadvantage that impacts on the intervention process. This support includes that provided by the Speech-Language Therapist/Audiologist (the researcher as programme co-ordinator), programme staff, and the use of service delivery components that ultimately serve to empower the caregivers. Elements of support include among others, facilitation of caregiver acceptance and understanding of deafness; informational and affective counselling; educational advocacy and referral to other professionals such as social work services. In agreement with Gallagher (1990) the creation of

more positive and extensive resources for support can result in better family interactions, particularly by reducing stress.

c) To provide information to the caregivers as a means of imparting knowledge and hence empowering the caregivers. Gallagher (1990) highlights the important role of providing families with accurate information about child development and associated issues, in coping with the circumstances.

d) To empower the caregivers as effective change agents. First and foremost, the involvement of caregivers in their children's intervention is believed to offer them some sense of empowerment in that they become integral members of the intervention team (Iacano, Chan & Waring, 1998). The programme components are believed to empower the caregivers participating in the programme, both as primary caregivers of the child and as language facilitators. In this context, empowerment may be defined as a strong sense of assertiveness and desire for power and control in important decision-making processes (Dale, 1996). The discriminatory practices of Apartheid cannot be disregarded in relation to issues of empowerment.

Michelson (1998) argues that the reasons for reduced empowerment of caregivers of hearing-impaired children attending parent-training services relate to racial issues and cultural factors, as well as socio-economic status variables. Michelson (1998) proposed that a caregiver's racial affiliation is the largest determinant of his/her level of empowerment. It is suggested that Black and Coloured caregivers who originate from traditionally oppressed backgrounds, will be less empowered than caregivers whose origins are in a traditionally oppressive race. Despite the abolition of Apartheid and the various accompanying political changes that have occurred in South Africa to date, it appears that those who were members of a dominated race still feel these sentiments today.

A2. Objectives

The starting point of an assessment of effect, according to Rossi and Freeman (1993), is the identification of outcome measures that represent the objectives of the programme. The short-term programme objectives were as follows:

a) To increase the caregivers' use of pre-linguistic communication skills in transaction and interaction with their deaf children;
b) To increase the caregivers' use of communication strategies that serve as language stimulation techniques;
c) To increase the caregivers' use of sign language in transaction and interaction with their deaf children;
d) To provide the caregivers with support in the acceptance and management of deafness. This support may bring about greater acceptance, confidence and coping as a means to empowerment;
e) To provide the caregivers with information regarding deafness and related issues, including the educational needs and placement options for the deaf child. This information may result in an increase in knowledge among the caregivers as a means to empowerment; and
f) To implement a programme that is culturally and linguistically responsive to the particular socio-economic context of the intervention and the deaf children and their families. In so doing, the appropriateness of an intervention service is likely to be enhanced.

Evidently, the goals and objectives of the programme centre on enhancing, and therefore changing, caregiver-child patterns of interaction. In so doing, the contribution of caregiver-child interaction towards the effectiveness of the intervention may be analyzed. Consequently, the findings of this study may contribute towards verifying the hypothesis that outcomes of intervention depend on parents adopting interactive behaviours that research suggests are associated with child development (Mahoney et al, 1998).

B. Development of the Communicative Intervention Programme

An intervention programme was compiled:

- On the basis of the findings of a pilot study on the communicative interaction between hearing caregivers and severe-profoundly deaf children;
- On the basis of existing programmes, in particular, The Hanen Program (Girolametto et al, 1986; The Hanen Centre) and the Intensive Interaction approach (Nind & Hewett, 1994). These programmes are geared toward parent- and parent-child- intervention, where the child has deviant or delayed language;
- By reviewing relevant literature, particularly recent developments in the field of speech language pathology and audiology concerning acquisition and development of spoken and sign language, caregiver-child interaction (both hearing and deaf caregivers and children) and early language intervention; and
- By drawing on the academic background and clinical experience of the researcher involved in the field of parent-child intervention and parent-child interaction.

The principles, nature, components, process and content of the communicative intervention programme will now be presented.

B1. The Principles of the Communicative Intervention Programme

The principles of the programme believed to favour successful intervention with caregivers and their children in a developing context are as follows.

a) Competence of a comprehensive team

Basic *knowledge* and practical *skills* are indeed vitally important for successful intervention involving young deaf children. Seitz and Provence (1990) believe that maximum benefit of the particular service is likely to ensue when the skills of the providers *match the needs* of the child and family. The need for competence implies the advantage of having a *team* of people with different areas of expertise to provide

services. The primary focus in the programme was that of communication through the modality of sign language, yet additional components were of great importance.

A team of people provided the programme. The researcher, as programme co-ordinator is a Speech-Language Therapist and Audiologist with previous experience in the field of deafness, including the involvement of the family of the child. The researcher together with a Deaf adult role model led the programme. Deaf signing adults as well as an isiXhosa-English interpreter played an integral role in the intervention process. Professional support was derived from a multi-disciplinary team of professionals within the *tertiary hospital setting*. These professionals included social workers, child and family psychologists, paediatricians and audiologists. Support from a team of people allows for the provision of a *comprehensive service* that does not focus on *communication and sign language* alone.

b) Cultural competence

The diversity in *language and culture* in South Africa presents a challenge to speech-language-hearing therapists in family intervention programmes. Currently, the majority of therapists who provide services to the traditionally disadvantaged children with hearing loss and their families are White middle-class individuals. Differences in cultural ideas and beliefs necessitate therapists to develop cultural competence (Louw & Avenant, 2002). Cultural variables are "the keys to understanding family relationships and dynamics" (Louw & Avenant, 2002:148).

Since the researcher as programme co-ordinator was part of a different culture and socio-economic background to that of the caregiver-child dyads in this study, a cultural perspective was considered essential. Cultural factors considered in this study included among others, the family structure, caregiver-child interaction patterns, education level of the caregivers, home language, child behaviour management, and health beliefs and practices.

Services need to be culturally as well as linguistically appropriate for families. As noted by Louw and Avenant (2002) language barriers further compound the presence of cultural mismatches between professionals and clients whom they serve. In this study, the researcher acknowledged the critical role of a trained *interpreter* from the isiXhosa community of many of the caregivers who participated in the programme. The nature of her role was such that it could allow primarily for cultural and linguistic sensitivity within the communicative intervention service.

c) Social and environmental context

For the communicative intervention programme to be effective it is argued that both the context of culture in intervention and the broader context of social and environmental factors must be considered. Of particular importance are the *socio-economic* pressures of the families being served and the *social attitudes and practices* of family and community members. In this way, the social model of disability and a socio-cultural perspective in intervention applies

Poverty in South Africa is directly linked to the political economy of inequality in a country in which wealth and power has historically been the domain of a racially defined minority. This current context is one of a combination of extreme income inequality, high unemployment and overwhelming poverty (Vally, 1998). The inextricable link that exists between poverty and disability will be highlighted in this study. Furthermore, social attitudes and practices may become barriers for the deaf child that restricts his/her participation in the immediate environment and society at large (Marks, 1997; Imrie, 1997).

d) Caregiver-child interaction

At the heart of this study was the communicative interaction between the hearing caregivers and their Deaf children in dyadic interactions. As noted by Cross (1984) early parent-child interactions form a primal bond that is the foundation for relating to and communicating with others. The numerous advantages of caregiver-child dyadic interaction have been well established in practice and in the literature on speech-

language-hearing therapy. These dyadic interactions apply to a naturalistic approach within a relationship-focused intervention, as described in this appendix. Moreover, the researcher acknowledges the importance of incorporating these dyadic interactions in the intervention process for hearing caregivers and their young deaf children from disadvantaged communities.

e) Working partnership and collaboration

An important aspect of programme effectiveness in this study was that of a working partnership and collaboration between the comprehensive team and the clients. According to Seitz and Provence (1990) a working partnership is the ideal outcome. Professionals are no longer expected to be the source of all expertise in the intervention process as the value of caregiver involvement is increasingly recognised. The caregivers' ability to sustain the child and actively contribute to the intervention process is vitally important to its success. A therapeutic alliance usually forms gradually, depending on the professional's ability to engender feelings of trust in the caregiver regarding competence, interest and availability (Seitz & Provence, 1990).

f) Involvement of Deaf adults

Deaf signing adults were involved in all stages of the research including the development of the programme, its implementation, the teaching of sign language, data collection, and data analysis. All Deaf adults were profoundly deaf, used sign language as a primary mode of communication, and were integral members of a Deaf community. These Deaf adults, involved at different stages in the intervention process, had Black, Coloured and White racial affiliations. The Deaf adult who played a primary role in the delivery of the programme was from the same community as the Black caregivers, being the majority of the caregivers in this study, hence the same cultural and socio-economic backgrounds.

As noted by Brown (2000) the positive implications of the use of a deaf adult from the same cultural background and social community as the family, as both the role model and communication facilitator to both caregiver and child, are twofold. Firstly, it allows the caregiver an opportunity to view a successful deaf adult from a similar background who

has overcome adverse situations favourably, and it is someone to whom they can identify and relate. Secondly it allows the caregiver and child to appreciate Deaf culture and acquire sign language.

The need for hearing parents of deaf children to have much early contact with deaf signing adults, who could help the parents to understand and appreciate deaf persons and Deaf culture, is well recognised. This may enable the caregivers to appreciate their deaf child as well as encourage their child to embrace him-/her- self as one who is deaf (Okwara, 1994 in Watkins et al, 1998).

Deaf adults play the role of communication facilitator for effective caregiver-child mediation and interaction and provide much support to the caregivers. Although difficult to learn as a second language, frequent contact with deaf people and a firm understanding and acceptance of the Deaf culture, can facilitate learners to acquire the language. As long as learners expose themselves to the language, learning will continuously occur (Kemp, 1998).

There is much need for a social support network among hearing parents of deaf children. Hintermair (2000) found that parents who sign to their children, while also maintaining contact with deaf adults, contribute to a larger social network. Thus those parents who have a larger, well-functioning social network are able to interact with other hearing caregivers of deaf children, share experiences and support one another, as well as maintain contact with deaf adults.

g) Empowerment

A fundamental principle of the programme of this study was the empowerment of the caregivers to interact effectively with their children and to confidently make decisions regarding the development of their children, including the development of the dyadic interactive relationship. In agreement with McCollum and Hemmeter (1997 in Weitzman, 1997) the degree to which parents are supported in their own development as confident

and competent parents may be a primary factor in differentiating successful from unsuccessful early intervention.

In addition to providing the caregivers with a variety of important skills in the domain of language and communication, the programme provided them with a great deal of support to increase caregiver empowerment so as to enable them to make informed decisions and choices for both themselves and their children. Each of the programme components served to empower the caregivers. These components (see section **B3** below) included the development of language and communication skills, particularly pre-linguistic communication skills; provision and exchange of information that served to impart knowledge; educational advocacy and support.

h) Continuity of care

The continuity of care from service providers entails the satisfaction of clients enhanced by the assurance of and evidence of them being seen by the same service providers over time. It is well known that professionals are more effective in their remediation and supportive functions when they know the caregiver and child well. Service providers must therefore be endowed with a capacity for sustained attention and service in order to serve families well (Seitz & Provence, 1990).

The researcher as programme co-ordinator provided the communicative intervention service as part of her professional research post within a tertiary hospital setting. The researcher was therefore in a position to establish a rapport with many of the caregivers prior to the intervention, and the caregivers and their children were able to access the intervention beyond the three-month period of the programme. Organizational arrangements that permit continuity of care contribute towards the effectiveness of intervention (Abramson, 1990). A more long-term intervention programme has been piloted and implementation has commenced on the basis of the findings of this study (see Commerford, 2003).

i) Appropriate resource materials

Programme implementation required support from appropriate resources. Throughout the course of the intervention, caregivers were encouraged to make use of various resources collected by the researcher, as part of a service offered at the centre for hearing-impaired and deaf children within a tertiary hospital setting, in which the researcher was employed. These included:

- Informative pamphlets addressing topics such as normal speech and language development, implications of deafness, and social-emotional development; and
- Media articles and informative pamphlets on sign language.

Specific to the programme, the following resources were available in English, Afrikaans, and isiXhosa:

- A user-friendly booklet for caregivers and significant others, on aspects and strategies of communication addressed in the programme.

At the start of the programme, a booklet on aspects of language stimulation and communicative interaction that were addressed in the programme was made available to caregivers. Practical examples were included. Since an important component of the programme was that of storytelling, the programme booklet included information and guidelines on storytelling with young deaf children. The researcher ensured that this booklet was available in the spoken home languages of the caregivers and their families by means of translation by first-language speakers of English, Afrikaans and isiXhosa.

The researcher compiled the booklet by means of:

- Drawing on existing programmes (in particular The Hanen Program, Girolametto et al, 1986) and the Intensive Interaction approach employed by Nind and Hewett (1994) which are geared toward parent- and parent-child- intervention, where the child has deviant or delayed language development;

- Reviewing relevant literature, particularly recent developments in the field of speech language therapy and audiology, concerning the acquisition and development of spoken and sign language, caregiver-child interaction (both hearing and deaf caregivers and children) and early language intervention; and
- Drawing on the academic background and clinical experience of the researcher.

o A sign language booklet.

All caregivers were issued a user-friendly Sign Language booklet in the initial stages of the programme, compiled by the researcher and Deaf and hearing personnel. The numerous vocabulary themes covered in the 12- session programme were included in the booklet. The lexicon was selected primarily on the basis of research on normal child language acquisition, and caregivers' reports of vocabulary used as well as needed. Vocabulary themes included for example, the family, body parts, washing, as well as syntactical aspects of sign language such as pronominals and conjunctions.

For each item in the sign language booklet, there is a Black and White line drawing of the individual sign and a drawing of the respective object and where possible, of the concept. The written word/s for the item is/are provided below the drawings, in English, Afrikaans and isiXhosa.

Several line drawings of the signs were obtained from a Signing Course booklet compiled by a Deaf adult teacher of sign language in the Western Cape (Lindeque, 1994, 1996). The majority of the drawings were a set of hand-drawings compiled by two volunteers. Some of the pictures of the objects/concepts to match the various signs were selected from several line-drawing picture books.

o A sign language video.

A sign language video, edited by the researcher, corresponded to the vocabulary items included in the sign language booklet. A video as opposed to booklet form of signed

vocabulary would benefit those families who have sufficient financial resources, whereas the booklet form was deemed critical for those less fortunate.

The vocabulary for the signs presented in the sign language video corresponded with that of the booklet. Over 400 categorised items for use with young deaf children are presented. Entries are presented audibly and in the written form in English, Afrikaans and isiXhosa as well as visually in sign language. The duration of the video is approximately 100 minutes.

Clearly, this video format allows for wide use for both hearing and deaf viewing. Moreover, aspects of sign language production such as movement and orientation can be presented effectively.

B2. Nature of the Intervention

A **relationship-focused intervention** approach, with its emphasis on caregivers interacting responsively with their children, applied in this study. According to Mahoney et al (1998) several early intervention projects in the 1980's incorporated aspects of parent-child interaction – relationship focused intervention (see MacDonald, 1989 and Mahoney & Powell, 1988 in Mahoney et al, 1998). Yet, a more widespread recognition of parent-child relationships in intervention services has occurred only recently. Of relevance to an emphasis on interaction, the approach to intervention focused on aspects of communication transaction. Moreover, the broader social and environmental context of the caregiver-child dyad was considered. In this way, a **transactional perspective** that highlights the reciprocal qualities of change occurring in individuals and in their environments over time applied in this study (Peck, 1993).

Bronfenbrenner (1979 in Peck, 1993) who conceptualised the 'ecology of human development', proposed that properties of the environment, as the particular individual experiences it, affect development. Transactional models suggest that development is influenced by the "constitutional characteristics of the child in dynamic interaction with

ongoing social relationships across multiple ecological contexts" (Crnic & Stormshak, 1997:209). In agreement with Crnic and Stormshak (1997), intervention needs to consider both relational and contextual factors if it is to be successful. As proposed by Mahoney et al (1998), if a transactional model of development is a valid characterization of the social and environmental factors that contribute to children's development, early intervention efforts may only be effective at enhancing children's development and functional outcomes if these efforts encourage parents to adopt interactive qualities found to be associated with children's development.

In line with characterizing the relationships between individuals and their environments as transactional and the influence on development, the communicative intervention programme adopts a **naturalistic approach** with an **ecological perspective**. The following discussion addresses the assumptions that provide the rationale for the naturalistic approach and an ecological perspective, and the conversational model of language intervention.

a) Naturalistic Approach with an Ecological Perspective

The gradual evolution toward an ecological perspective for family involvement projects results from the recognition that the hearing impaired or deaf child is an organism developing in interaction with the environment (Bricker & Veltman, 1990). Children's development is assumed to occur within the context of their ecological systems. A variety of ecological variables ranges from those directly affecting the individual in daily interactions to those that operate more indirectly through, for example, cultural values and beliefs (Peck, 1993).

The wider social and environmental influences, as contextual factors, in engendering a state of disability cannot be disregarded (Imrie, 1997; WHO, 2001a). Research on attitudes towards people with disabilities in different cultures supports the argument of social theorists that disability is relative to particular **social** and **cultural** practices and independent of the particular impairment or loss of a bodily function, intellectual or physical (Kalyanpur, 1999). Moreover, the **economic** context and its influence on

services, systems and policies, are among a variety of environmental factors that need to be considered in understanding disability and in providing appropriate intervention (WHO, 2001a).

Consequently, intervention efforts must be directed at the systems level allowing for a service to the child within the constraints of this broader ecological context, rather than exclusively at the child or parental level (Fitzgerald & Fischer, 1987; Bricker & Veltman, 1990). In line with this shift in perspectives is the shift in the professional's role to now adopting an approach or attitude to working with families, serving to consult, train and provide support, rather than directing the process, as already discussed.

An ecological perspective forms the basis of a naturalistic approach. That is, a naturalistic approach to intervention recognises that children learn language, and hence communication skills, through naturally occurring interactions with their caregivers. By learning to communicate in real-life situations, the child is better able to generalise newly learned communication skills to other situations (Rossetti, 1996). Child language growth should be facilitated via experiences with functional communication (Friel-Patti & Lougeay-Mottinger, 1985). Language is after all, pragmatic in nature (Conti-Ramsden, 1993).

Developmentally based approaches that provide functional, purposeful activities in naturalistic settings emphasize the notion that social experience and meaningful, responsive adult interaction will contribute substantially to the acquisition of linguistic structures (Owens, McNerney, Bigler-Burke & Lepre-Clark, 1987).

The devised intervention programme focuses on themes, such as dressing, washing, and eating, which apply to everyday situations. The approach to intervention regards functional communication (i.e. language use) rather than linguistic forms as the essential feature of intervention, thereby addressing the generalization and maintenance problems of traditional systems as noted by Fitzgerald and Karnes (1987). In order to encourage spontaneous, natural communication and to create an opportunity to provide the

caregivers with functional communication skills, all activities were 'directed' more by the caregiver and child rather than by the researcher. In so doing, a working partnership relationship rather than a clinical helper-client arrangement was established.

In this programme, learning for the caregivers focused on an experiential approach through programme activities such as small group discussions, everyday-type activities with the child (e.g. washing, eating), and analysis of videotaped interactions. The aims of experiential learning are to allow for a more naturalistic approach, to allow caregivers to draw upon their prior knowledge and experience, to accommodate individual learning styles, and to address the concerns of caregivers.

b) A Conversational Model

The rationale for a conversational model is discussed as it relates to the role of **dialogue skills** in the acquisition of semantic-cognitive and linguistic knowledge (Girolametto et al, 1986). The core of the communicative intervention programme is dialogue or conversational skills, namely **joint attention, turn-taking, response and initiation skills**. Reciprocity is evident in dialogue as the process of language acquisition requires joint problem-solving by parent and child (Girolametto et al, 1986).

Bruner (1978 in Girolametto et al, 1986:367/8) describes the finely tuned interactions that develop naturally and occur frequently when the child develops normally: "The child's entry into language is an entry into dialogue and the dialogue is at first non-verbal and requires both members of the pair to interpret the communication and its intent. Their relationship is in the form of roles and each 'speech' is determined by a move of either partner. Initial control of the dialogue depends on parent's interpretation which is guided by a continually updated understanding of their child's competence."

Of particular relevance to this study are the numerous positive effects of dialogue skills on language acquisition that have emerged from studies of mother-child interaction. Three of these effects are as follows.

Firstly, the nature of the dialogue of early social interaction facilitates the development of **meaning** and **intentionality**. The sharing of **joint focus** and the temporal juxtaposition of parental **feedback** help children to make cognitive and linguistic comparisons between their parent's utterances and their own interpretation of the referent, or between their acts and their parents' responses (Girolametto et al, 1986; Rushmer, 1994). Rushmer (1994) asserts that parents know intuitively that sharing in their child's attention to an object or event is essential to communication. Secondly, the redundant nature of **turn-taking** allows children to receive or express a meaning expressed in a variety of different ways (Girolametto et al, 1986).

Thirdly, as children's dialogue skills develop and improve, they are better equipped to learn language at a faster rate, as well as receive qualitatively and quantitatively more language input than less interactive children. The reasons for this advantage is that they are able to elicit quantitatively more linguistic input, and this increased quantity of conversational experiences increases the rate of **semantic** and **syntactic** language acquisition. (Girolametto et al, 1986).

As was illustrated in Chapter Three on the issues regarding communication breakdown between hearing caregivers and their deaf children, both child and caregiver are at a disadvantage. The child is at a disadvantage in that s/he is not part of a rich, stimulating linguistic or communicative interactional environment due to his/her sensory deficit and to a hearing conversational partner who has no or minimal experience in communicating with a deaf child. Similarly, the hearing caregiver is at a disadvantage, needing to communicate with his/her child in a foreign medium and from a hearing perspective, "one that assumes the presence of audition in subtle and pervasive ways" (Erting, 1982:395 in Swisher & Christie, 1989:42).

In this situation, it is thus unlikely that:

- The child's dialogue skills would improve to the extent that s/he is able to elicit more linguistic input and hence profit from the linguistic environment and learn language at a fast rate, or that

- S/he will receive more language input that is of a better quality than that of a less interactive child.

Consequently, both caregiver and child need to be addressed in the intervention process. The adult has already progressed through the process of language acquisition and development and s/he is familiar with dialogue skills as well as familiar with the child. The adult is thus presumably in a good position to acquire a second language that is suitable for the child, and to apply his/her semantic-cognitive and linguistic knowledge to dyadic interactions with the child.

In agreement with Girolametto et al (1986), the key role of the adult in facilitating dialogue appears to lie in the adult's responsiveness to the child's cues. The practice of **contingent responsiveness** and its role in the facilitation of language acquisition was a central aspect in the programme. In view of the limited caregiver-child interaction, it seems reasonable to assume that the caregivers find it difficult to impose a dialogue structure in interaction with their children and are limited in their extent to which they can provide contingent feedback on child-initiated topics.

Several intervention studies that adopt an interactional approach report that increased responsiveness to the child's activity and reduced topic control, facilitate both conversational participation and language development (see Wells, 1984 and Lieven, 1984 in Girolametto et al, 1986). McDade and Varnedoe (1987) highlight the advantages of training parents to follow the child's lead. Joint reference is guaranteed; semantic contingency is enhanced; the number of topic shifts is reduced; and task refusal is avoided, which in turn allows for the reduction in behaviour problems that often interfere with the language process.

In view of the importance of contingent responsiveness, the intervention programme is **semi-structured** rather than highly structured because the emphasis is on following the child's lead in interactions, as opposed to emphasizing teaching strategies that are highly didactic and/or carefully structured in order to obtain pre-planned objectives.

Moreover, the programme is semi-structured in order to follow the lead and the needs of the caregivers. Rossi and Freeman (1993) differentiate between an assessment of the needs and of the demands of clients being served in intervention. A needs assessment describes what others perceive are the needs of an at-risk population based on an appraisal of their problems, while a demands assessment describes the expression of the problems and needs, and of the types of services most likely to be used by potential participants themselves.

The programme of this study was driven by the needs identified by the researcher in her experience in the field, and by the needs according to the caregivers. The researcher periodically adjusted the agenda in order to meet the voiced needs of the caregivers throughout the programme.

B3. Service Delivery Components

An ecological perspective has significant implications for early communication intervention with children with hearing loss and their families (Louw & Avenant, 2002). Within the ecological framework, the caregiver-child dyad is at the heart of the communicative intervention programme that includes four primary service delivery components, as depicted in Figure (a). Even though the focus is on language and communication relating to the child's deafness, the components also consider empowerment of caregivers and their young deaf children from disadvantaged communities, power sharing between the team of people delivering the programme and the caregivers, culture, and the socio-economic climate. The components were adapted from Fitzgerald and Fischer's (1987) early intervention model of which the components were information exchange, supportive counselling, facilitation of child communicative competence, and educational advocacy and team decision making. However, the wider influences constitute the novelty of this study in the context of development and of a multicultural and multilingual society.

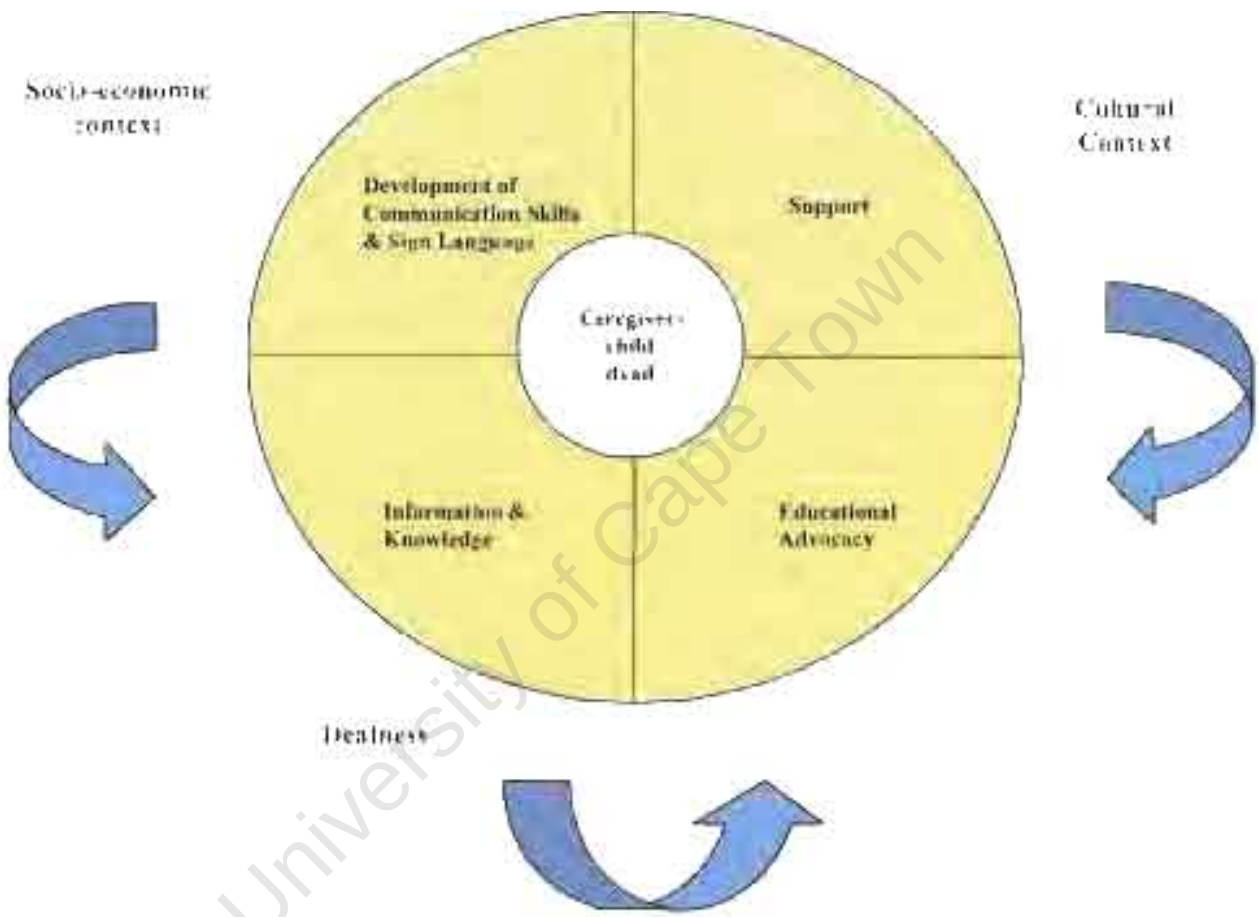


Figure (a): Communicative Intervention Programme Service Delivery Components

- **Support**

Support in various forms was a critical component throughout the programme. Supportive counselling was provided to caregivers at the commencement of the study during the initial interview, and assistance was extended to include the establishment of an ongoing mutual support network for caregivers and their families throughout the

programme. According to several early intervention professionals supportive counselling is the first service that should be provided to families following the initial diagnosis of a disability (e.g. Moses, 1985 and Turnbull & Turnbull, 1986 in Fitzgerald & Fischer, 1987).

Caregivers were offered a variety of opportunities to meet their expressed needs for sharing individual concerns and developing mutual support with other caregivers with similar concerns. These opportunities included for example, group discussions on issues such as the diagnosis of hearing loss and caregivers' reactions to it; open discussions with hearing-impaired and Deaf adults; sharing experiences in group discussions; and where necessary, individual counselling sessions.

According to Rushmer (1994), the support that parents gain from one another in a group is one of the most long-lasting and valuable elements of their early intervention programme. Fitzgerald and Fischer (1987) identified that the intimacy and the intensity of the support derived from other parents who had confronted similar circumstances may be more effective than professional counselling for many families. In addition to a caregiver group in this study, the needs of the Deaf children were addressed in that both caregiver and child (and significant others) were invited to attend and children were able to engage in play activities while caregivers were engaged in particular topic discussions.

In addition to the various opportunities for support outlined above as well as parent-to-parent support, the intervention service aimed to offer support derived from staff including Deaf signing adults, an interpreter and professionals involved in the management of childhood deafness and related issues.

Furthermore, the programme acknowledged the tremendous socio-economic pressures for the caregivers and their families in that assistance was offered in terms of social support applications and transportation costs to access the service.

Finally support was offered in terms of the other programme components, namely information giving and exchange, development of communication skills and use of sign language, and educational advocacy.

- **Information and Knowledge**

The sharing of information allows caregivers to begin to acquire the knowledge base and form attitudes necessary to become effective change agents (Fitzgerald & Fischer, 1987).

As is the case with the supportive counselling component, sharing of perceptions is critical in information sharing. Group discussions encouraged the facilitation of open exchanges of information and opinions. Information-sharing discussions were carried out on for example, the children's level of functioning at a particular time, communication styles and environments.

Moreover, the researcher and Deaf adult presented information to caregivers on various topics and these were then discussed in the group, and where possible demonstrated to the group. Topics included for example, deafness and child development, communication and breakdown, Deaf culture, sign languages, language stimulation and activity ideas. Written and pictorial information was also provided as resource materials and videotaped data of caregiver-child interaction were observed and discussed. Where necessary, information was provided by professionals within the tertiary hospital setting on issues such as behaviour management and disability, and care dependency grants.

- **Development of Functional Communication Skills and the Use of Sign Language**

Since language emerges from social interaction with caregivers and language acquisition is a primary task of the deaf child, the promotion of effective communicative interaction is of primary focal importance (Rushmer, 1994).

The intervention programme is concerned with interaction at the level of the caregiver-child dyad and with aspects of communicative transaction of the caregiver, as a means of

facilitating communicative competence. The aims were to enhance the development of functional communication skills and teach sign language so as to encourage the use of sign language by the caregivers with their children.

Development of functional communication skills involved analyses of caregiver-child communicative interactions during play and storytelling, using clinical observations (see Cole & St. Clair Stokes, 1984a, b), and modelling by the researcher and Deaf role models of communication strategies particularly useful in deaf communication. Special attention was given to differences in interaction according to the age of the child. Practice activities were included during the sessions in order to allow for individualization of programme content and relevant feedback to caregivers regarding communication transaction and interaction. Programme personnel spent time with each of the dyads during these practice activities.

Furthermore, feedback was given to caregivers on samples of their interaction with their children that was videotaped pre-intervention. This video feedback served to provide on the spot training and guidance within a group setting and interactive, cooperative learning. Evaluations of The Hanen Program reveal that the combination of group training and consultation through video feedback is a very effective way of teaching (Girolametto, 1988). Moreover, the videotaping and feedback may be especially helpful to parents who do not think about the way that they interact with their children until they see themselves doing it, and may help to desensitize parents to further videotaping.

Samples of interaction were observed and discussed in terms of:

- Strategies that appeared to be useful in facilitating the child's communication and in establishing successful turn taking episodes;
- Strategies and/or utterances resulting in communication breakdown; and
- Means of further facilitating the child's communication, of encouraging contingent turn taking episodes, and hence minimizing breakdown.

In particular, caregivers were encouraged to incorporate principles such as those of reciprocity and contingency into daily interactions with their child. Consequently, opportunities for generalization of newly learned skills could be maximized. An additional focus on caregiver-child interaction was achieved in that the caregivers observed videotaped interactions between deaf mothers and their deaf children as a model of communication through sign language.

The following communication and language parameters were addressed in the programme:

- ✓ Turn-taking
- ✓ Eye gaze patterns and the importance of the visual system
- ✓ Attention-getting strategies
- ✓ Contingency and reciprocity
- ✓ Language stimulation techniques (e.g. labelling, repetition, expansion)
- ✓ Acknowledgement and praise
- ✓ Use of pointing in sign language communication
- ✓ Use of non-manual features of sign language
- ✓ Teaching of sign language and use of sign language

- **Educational Advocacy**

Fitzgerald and Fischer (1987) define advocacy as a positive process involving both rights and responsibilities and assert that families of hearing impaired children can learn advocacy skills.

The advocacy component of the programme focused on educational needs and placement options for the children within the context of the socio-economic constraints of the families. In addition, the history of deaf education was outlined. Educational needs were discussed primarily in terms of effective communication for the child and optimal interaction environments. Placement options were presented with detail on factors such as location, transport, costs, mode(s) of communication and boarding facilities.

Moreover, it was made clear that it was the onus of the caregivers to make final decisions regarding placement.

Penn et al (in process) assert that the choice of language medium in education be a fully informed one and that it takes place early in the child's development so as to ensure appropriate cognitive and scholastic growth. This choice is particularly important in light of the nature of sign language and the unusual status of the deaf child's language learning context (Penn et al, in process). In support of Penn et al (in process), specialized educationists and professionals – such as speech-language therapists and paediatricians – involved in family intervention with the deaf child, need to be aware of and familiar with the rights of the deaf and the different language options and implications thereof for the child. Currently, such knowledge and awareness is atypical of those working in these professions (Penn et al, in process).

With the foregoing components of service delivery, a process of assisting the caregivers in this study to become more confident, assertive and effectual was applied in the implementation of the programme. In addition to the provision of skills, the sharing of information, the support and educational advocacy, contribute toward **empowerment** of the caregivers to make informed decisions and choices for themselves and their child.

B4. Process and Content of the Communicative Intervention Programme

The process of delivery of the intervention programme will now be presented to address the question "*How* to deliver?" and the content will be outlined to address "*What* to cover?" The structure of the sessions in the delivery process is described and a typical session-by-session progression of the content is presented.

a) Delivery Process

A certain amount of flexibility was necessary in delivering the programme in order to follow the specific needs of the different groups of caregiver-child dyads. Typically, the programme included:

- Initial consultations with each caregiver-child dyad and significant others prior to the first session
- 12 weekly, group sessions of 5-hour duration

At the start of the programme a **discussion** was entered into between the programme co-ordinator and the caregiver (and significant others were welcome). This discussion focused primarily on the needs of the caregiver, the collection of background information relevant to the intervention, the intervention process, and caregivers' expectations for the programme. For the purposes of evaluation, a sample of caregiver-child interaction was recorded as a 'baseline' measure.

The programme consisted of one five-hour group session per week either during the week or on the weekend for a total of twelve sessions, equating to 60 hours of intervention over a three-month period. **Group** sessions allow several caregivers to receive information at one time, providing opportunities for interactive, cooperative learning. Moreover, opportunities are provided for caregivers to support one another.

It was not possible to intervene more than once a **week** primarily for the following reasons. Socio-economic factors and the wide geographical location of the dyads' residences influenced access to and participation in the programme. Moreover, family commitments demanded the caregivers' time, particularly since all those participating in the intervention were primary caregivers of one or more children. However, sessions were not spread out over a longer time frame primarily in view of the caregivers' need for support relating to child development and socio-economic disadvantage. Prior to the start of the intervention, caregivers voiced their preferences regarding the day of the week and the times on that day which suited them. An attempt was made to meet their needs as far as possible.

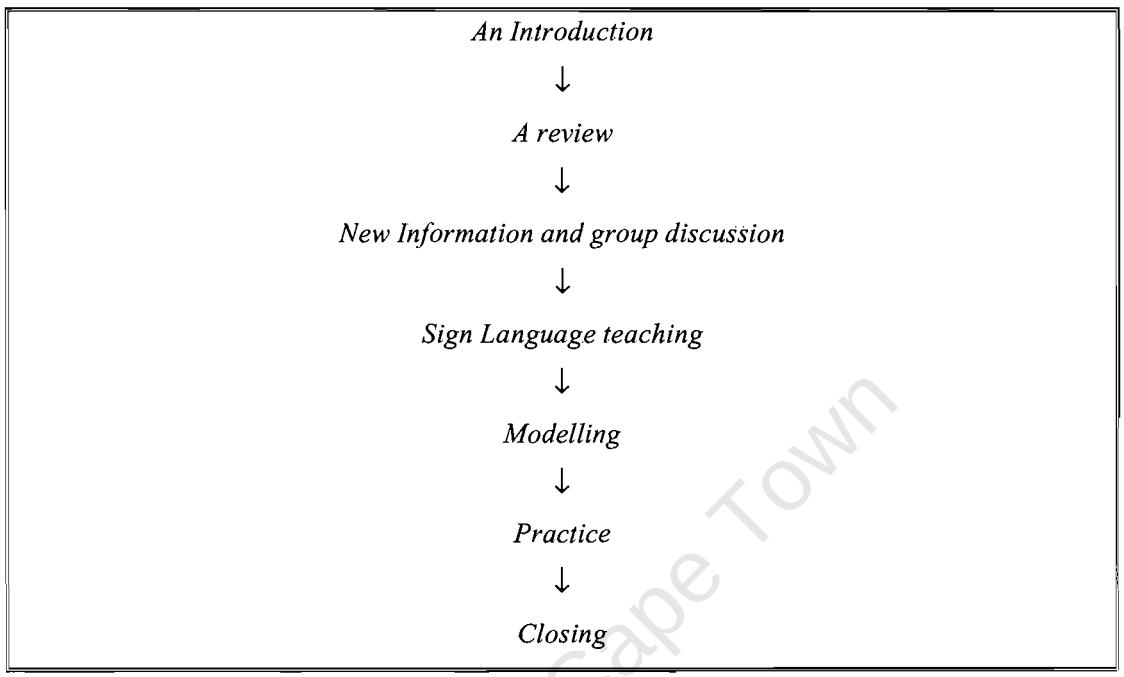
A **five-hour** duration was necessary for the following reasons. In view of the caregivers' educational history, adequate time was needed in the sessions to provide information clearly and simply, and for modelling and practice opportunities. Reliance on written

materials was not appropriate. Moreover, information was conveyed and discussions were held in English, Afrikaans, isiXhosa and sign language, with time necessary for translation. It was also evident that caregivers benefited greatly from support offered by others in the group sessions while transport difficulties did not allow for this support outside of session time.

Several interventions in the field of child language have employed a time frame of **12 weeks or sessions**. For example, Fey, Cleave, Long and Hughes (1993) describe a 12-week interactive language intervention in training parents to administer focused stimulation intervention to teach specific target words to their toddlers with language impairment. Girolametto, Verbey and Tannock (1994 in McCollum & Hemmeter, 1997) trained mothers of developmentally delayed children in interaction-promoting, language modelling and child-oriented strategies over 12 weeks. Cunningham, Reuler, Blackwell and Deck (1981) compiled a 12-week programme that focused on mother-child interactions for the purpose of behavioural and linguistic development. The programme of this study constituted a short-term intervention primarily in view of the content to be covered in a programme that constituted the first formal intervention for the caregivers and their children. A short-term programme may allow for the opportunity to extend the service to more long-term intervention and highlight factors to be considered in extending the service.

Each of the twelve sessions followed the same structure, which was adapted from the structure used in The Hanen Program (Girolametto et al, 1986). The structure applied in the sessions is depicted in Table **(a)**.

Table (a): Structure of the Sessions of the Communicative Intervention Programme



The *introduction* typically included a welcome, a presentation of the agenda, and announcements. The *review* generally consisted of a revision of the previous session, a discussion of home progress and problems, and a brief summary by the programme co-ordinator and the group of the previously covered information. The review served as a reminder for all caregivers, particularly those who were not present at one or more of the sessions.

The co-ordinator and/or the Deaf adult involved in service delivery and/or guests (e.g. other Deaf adults, social worker) presented the *new information*. The topic of the new information in most sessions was coupled with a group discussion on a related issue. This discussion provided caregivers with an opportunity to share personal experiences and insights and thereby provide one another with an important source of support. The Deaf adult then revised previously taught *signs*, and taught additional *signs* relating to a particular theme (e.g. making a sandwich) and to requests from caregivers for particular signed vocabulary. The co-ordinator and Deaf adult modelled all new strategies and techniques in order to illustrate the new information in signed interactions with the

children. They simultaneously commented on the interactions by highlighting particular facilitation strategies and techniques. Role-play and various sign language practice activities were also carried out with the caregivers.

Caregivers were then given the opportunity to put all new information (and previously covered information) and signs taught, into *practice*. Pre-planned activities that related to the particular theme of sign vocabulary for the session were carried out between each caregiver-child dyad. The co-ordinator and Deaf adult/s observed the interactions and provided positive feedback.

Finally, the *closing* included a session summary and allowed for comments, questions, and ideas regarding topics of importance to caregivers.

b) Content

The programme content included the teaching of sign language and reflected a conversational model of language intervention. This model complies with the standpoint of Girolametto et al (1986) that dialogue skills are a prerequisite to language development, and the development of dialogue skills is positively affected by parents' responsiveness to child-initiated actions and utterances.

The content allowed for a 12- session programme for caregivers who had no previous exposure to communicative intervention. Aspects of communication, language stimulation techniques, and sign language were addressed. A functional approach to the use of sign language and the implementation of communication aspects and strategies in activities of daily living was emphasized throughout.

An outline of the content of each session that adhered to the typical session structure is presented Table (b) below according to the primary goal/s, topics of information, particular aspects of communication and sign language, and examples of activities for each of the 12 sessions. Only the new information provided to caregivers is presented in the outline. Topics discussed in the group are highlighted yet topics raised by the

caregivers in the sessions are not outlined. Revision of information is not presented in order to avoid redundancy.

Since the researcher followed the lead and needs of the caregivers, the programme was not highly structured. Rather, the emphasis on particular content items varied in accordance thereof. The outline of the session content in Table (b) illustrates the typical session-to-session plan used across the 16 caregiver-child dyads in this study.

Table (b): Outline of the 12 sessions of the communicative intervention programme

Session	Primary goal/s	Information-giving and exchange	Particular aspects of communication and sign language	Types of activities
1	a) To orient caregivers to the nature of the programme b) To increase caregiver awareness of their role as language facilitators and of the child's ability to communicate	- communication, language, and influence of deafness - the childhood of two Deaf adults - deafness, communication modes for the deaf, the 'concept' of a Deaf culture	- examples of communication strategies to be addressed in the programme	- icebreaker activity - baking bread activity: strategies modelled
2	a) To address pre-linguistic skills b) To further point out the implications of deafness	- outline of the types, degrees and causes of deafness - deaf mother- deaf child interaction	- attention-getting strategies - turn-taking, giving the child a chance	- modelling - dyad Hide-and seek game
3	a) To address attention and visual attunement in communicative interaction	- speech development of deaf children, hearing aid candidacy - development of sign language	- contingency: role of visual attunement - divided attention	- video of Deaf mother-Deaf child interaction - modelling of various attention-getting strategies - making a sandwich

Table (b) continued: Session outline				
Session	**Primary goal/s**	**Information-giving and exchange**	**Particular aspects of communication and sign language**	**Types of activities**
4	a) To address additional communication strategies b) To create awareness regarding communication breakdown	- Communication breakdown - Lexical variation of sign language - Aspects of hand-shape, place, movement and orientation	- Contingency: imitation & labelling - Repetition - the forced alternative	- role-play - group trouble-shooting: communication breakdown with the children and in the family and community
5	a) Educational advocacy	- educational needs of the deaf child, - local placement possibilities	- points (e.g. pronouns) - non-manual features (e.g. question formation)	- modelling with children of different ages - facial expression game - washing up activity
6	a) To address behaviour management b) To continue to examine language and communication strategies	- discipline	- Aspects related to behaviour management such as the use of directives, praise & acknowledgement, and the use of questions	- contrastive modelling of effects of different types of questions - group discussion on typical discipline scenarios

Table (b) continued: Session outline				
Session	**Primary goal/s**	**Information-giving and exchange**	**Particular aspects of communication and sign language**	**Types of activities**
7	a) To point out the importance of age-appropriate communication	- Deaf role models: onset of deafness, mode(s) of communication, family constitution and support, and feelings as a deaf child maturing into adulthood	- Contingency: adding information at child's level, semantic and syntactic expansions - Choice of communication strategies for child's age	- Modelling and role-play activities: age-appropriate strategies and sign language vocabulary - Play: small groups of same-age children
8	a) To keep the turns going	- Parents as role models	- the range of pre-linguistic and other dialogue skills that encourage contingency	- children's dressing game - caregiver pairs competition: most number of turns
9	a) To introduce caregivers to the important role of storytelling with books	- Why engage in story telling? - preparing for storytelling (e.g. types of books, seating)	- language and communication strategies: same as those for play and other interactions	- modelling by Deaf mother and Deaf child - dyadic storytelling - cutting out pictures for own books

Table (b) continued: Session outline				
Session	**Primary goal/s**	**Information-giving and exchange**	**Particular aspects of communication and sign language**	**Types of activities**
10	a) To continue the theme of storytelling b) To provide training on communicative interaction by means of video-feedback	- relevant information on storytelling, - feedback on videotaped play and storytelling interactions recorded pre-intervention	- storytelling techniques - visual attunement	- making own books - storytelling interactions - group discussion on video feedback and particular aspects of communication
11	a) To empower caregivers to be confident in storytelling interactions with the child through the use of sign language	- access to appropriate books	- facial and spatial aspects of sign language useful in storytelling (e.g. pantomime)	- group sign language games - modelling by Deaf adult - application of facilitation strategies & techniques
12	a) To review programme content b) To administer the caregiver evaluation questionnaire c) To discuss more long-term intervention	- review - continuity of intervention options	- review	- group signing games - evaluation questionnaire - PARTY!

Particular aspects in the session outline require further mention. Communication strategies were addressed in a particular sequence according to a natural progression in sign language communication and as far as possible, language stimulation. For example, pre-linguistic skills such as turn-taking patterns, attention-getting skills and eye gaze patterns, preceded strategies and techniques such as labelling and repetition that in turn preceded techniques such as the use of complex recasts. Similarly, aspects of sign language were addressed according to a progression in that complex spatial aspects for example, were not introduced in the caregivers' first formal training programme prior to the use of pointing to referents that are present. Moreover, sign language vocabulary complied with the progressions and was relevant for child use. The lexicon consisted of high frequency items of pre-school aged children.

The approach to training also considered age-appropriateness in terms of communication strategies and sign language vocabulary. As an illustration, the caregiver of a younger child who is not yet using sign language expressively cannot choose the range of recasts suitable for use with the older child who is expressing his/her intents, feelings, requests, and the like in sign language. Pre-linguistic skills and vocabulary representing items familiar to the child were recommended for the younger child. The greater level of complexity of communication transaction (e.g. descriptive labelling) and interaction (e.g. recasts) for caregivers of older children indicated the need for a larger sign language vocabulary among these caregivers. An increased awareness of effective facilitation strategies and techniques was to encourage self-monitoring skills.

A Deaf adult was responsible for sign language instruction and accompanied the co-ordinator in modelling particular strategies and techniques throughout the programme. This Deaf adult, in addition to other Deaf role models, provided information relevant to deafness and communication through sign language. All information-giving and exchange in the programme included specific information pertaining to the dyads in the group. Signs for a particular theme were taught during each of the sessions and caregivers were encouraged to share their needs throughout the programme regarding sign language

vocabulary and particular information. Rather than single words alone, useful phrases and sentences expressed in sign language were modelled and practiced in the group in each session. Sign language 'games' were carried out in the group in order to boost the confidence of the caregivers further in their use of this mode of communication.

The theme of the caregiver-child 'practice' activity was different to that of the modelling activities in order to encourage individualisation of programme content. The 'practice' activities included those carried out within the caregiver group with the co-ordinator and Deaf role model/s, and those carried out within smaller groups of caregiver-child dyads or simply the dyads, who received feedback from programme staff. All activities related to particular themes in various contexts such as play, relevant activities of daily living, and storytelling.

Caregivers required tremendous encouragement and praise in actively engaging in joint storybook 'reading' with their children. Much 'practice' was necessary in terms of storytelling with the children, particularly in view of the caregivers' socio-economic disadvantage and past educational experiences during the period of Apartheid. In this regard, materials were provided in the session in order to make picture books for home use. Moreover, caregivers were encouraged to make use of community libraries in order to engage in storytelling interactions with their children. Differing traditions regarding storytelling were acknowledged and did not influence the nature of storytelling in this study.

With regard to educational advocacy, it is necessary to point out that children aged three years and older at the start of the intervention were to be placed in an educational setting as soon as possible. Educational advocacy was an ongoing process throughout the programme. Moreover, referrals to other professionals (e.g. social worker, paediatrician) were made as and when necessary during the programme as a means of providing a comprehensive service to caregivers of deaf children and their families. In fact, a social worker provided input to caregivers during the sessions on discipline and on the application for care dependency grants.

APPENDIX 5: METHODS OF TRANSCRIPTION AND GLOSSING

- **Sign and sign-related data:**

The following conventions, similar to those employed in previous studies (e.g. Lidell, 1980; Tait, 1993), were used to gloss caregivers' signed and gestural utterances.

- Individual signs were written in English glosses in upper case letters.

- If a non-manual signal (i.e. a particular facial expression, head position or movement, body position or movement, or any combination of these) occurred during a signed utterance, this occurrence was symbolised across the duration of the non-manual signal. For example, a non-manual signal that occurred throughout a sign sequence such as: point WHAT, was symbolised as follows:

  _____**q**
  point WHAT

  The following notation was used for non-manual signals:
  __q = sign or sign-spoken question with non-manual signal; **__nmq** = non-manual question (in the absence of the manual counterpart); **__neg** = negative (e.g. headshake, shrug shoulders); **__nod** = 'yes', 'good', 'okay' nod as an assertion or acknowledgement; **__aff** = affective; **__adv** = adverbial function; and **__adj** = adjectival function.

- If an utterance was not accompanied by a non-manual signal, the superscript for the particular communicative function was used. For example, the signed question: point WHAT, that was asked in the absence of a non-manual signal, was symbolised as follows:

  q
  point WHAT

- If a non-manual signal was used in isolation, it was symbolised using the appropriate notation (as above) and in the absence of a manual counterpart. For example, the question 'what?' that was asked by means of a non-manual signal alone was symbolised as follows:

  _____nmq

  point BALL point

- Reference to pronouns was transcribed as follows:

  First person singular (I/me) - **PRO.1**

  Second person singular (you) - **PRO.2**

  Third person singular (he/she/it) - **PRO.3**

  First person plural (we) - **PRO.1pl**, etc.

  The same applied to the possessive marker, thus "hers", "his", "its" = **POSS.3**.

- A gesture was glossed using the symbol **G**.

  Gesture may be defined as an action that is not a formal sign, that does not involve pretended object use (thus an intransitive gesture as defined by Helm-Estabrooks, 1992), and which has deliberate communicative intent (Foster, 1990).

  Moreover, gestural communications do not take the form of recognizable linguistic units (Foster, 1990). Gestures that accompany speech or sign are not composed of parts, but are non-compositional wholes (Goldin-Meadow, McNeill & Singleton, 1996).

  It is reported that research into the early non-verbal communication of deaf children of hearing parents shows spontaneous gestural communication systems that parallel natural child-language systems. Reportedly, deaf children are able to regularly use non-verbal communicative acts to express themselves (Goldin-Meadow, 1985).

Gesture for linguistic purpose has been included as a parameter in this study because its usage plays an important role in the bridging into rule-governed sign language (Christensen, 1988; Caselli, 1994).

- **ws** indicated that a semantically incorrect sign was used. This gloss represented a wrong sign. The Deaf research assistants checked the handshape, movement, location, and orientation for each sign, and findings are included in the results of this study. The sign was glossed as **ws** if all four aspects of the sign did not match the intended meaning for the particular sign. Signs were not glossed as **ws** if one or more of these aspects was correct and the semantic meaning of the sign was appropriate for the particular topic.

- **Non-vocal data that excludes signed data:**

- All actions with communicative intent, including transitive gestures, and relevant contextual information, were transcribed in lower case letters (e.g. mother moves toys out of the way and places the book in front of herself and the child).

- Physical/gestural movement may have involved physical contact between caregiver and child/object (e.g. mother taps child on arm) or no contact per se but showing communicative intent (e.g. mother waves hand in child's line of vision).

- Eye gaze patterns were glossed above the transcribed data at the corresponding position of occurrence, as follows:

Caregiver gazes at child	- **m-c**
Eye contact/mutual gaze	- **mg**
Caregiver gazes at book	- **m-bk**
Mutual gaze to book	- **mg-bk**
Caregiver gazes at object/action	- **m-o**
Mutual gaze at object/action	- **mg-o**
Gaze aversion by child	- **GA**

It was difficult, in a storytelling episode, to determine with confidence whether the caregiver or child looked directly at a specific picture on a particular page, or directly at the other's point. Eye gaze was thus simplified to gaze at the book.

- **Vocal data:**

- Vocal utterances, including vocalisations such as "mm mm" that indicate negation, were transcribed in lower case letters within quotation marks.

A note was recorded as part of contextual data if spoken utterances were mouthed. The speech of caregivers was seldom very soft and thus unintelligible. These utterances were indicated in the transcript by an empty parenthesis (___) but excluded from analysis. The specific communicative function of spoken utterances was important only when accompanied by sign, non-manual features or gesture in that the use of speech alone with the profoundly deaf child constituted communication breakdown.

APPENDIX 6: EXTRACT FROM A CODED TRANSCRIPT

Subject: S12

Time: Post-intervention

Context: Storytelling

TTcon-Con

mg-bkb m-bkb mg-bkb

Both look at book as c turns page. c points to picture, c: BABY, m looks at picture

TTcon-Recc s

Desc s PTT

DPro Lab s Dlab s mg-bkb

[m points to same picture THIS BABY SLEEP] c sees m signing c turns page.

TTcon-Cons

TTcon-Con Tch s TTcon-Rec m s

m-c Lab s c-m mg R Lab s Lab s

c tries to sign 'hat'. m looks at c. m: HAT as c looks at m. [m: HAT JERSEY]

TTcon-Con mm

TTcon-Con TTcon-Con Ack mm

m-bkb mg-bkb m-c _nod + _ ___aff

c looks at book. m looks at book. c: JERSEY m looks at c. m: nods yes and smiles

TTcon-Con

dPro

TTcon-Topch AD s

mg m-bkb PAG Lab s

c looks at m. m looks back at book. [m points to another picture THIS SHOE]

mg-bkb

c looks at picture. c copies sign and turns page. .

APPENDIX 7: PILOT STUDY MODIFICATIONS

- **Research Design:**

  An attempt was made initially to locate a control group of caregiver-child dyads, but was aborted primarily on the basis of ethical considerations as well as difficulties implementing control techniques, such as matching.

  As a means of strengthening the design that did not include a control group, a multiple baseline, or time-series based, design was piloted on one of the groups of dyads participating during the pilot phase. Videotaped data on dyadic interaction was collected prior to programme implementation, halfway through the course of the intervention, and post-intervention. A pre-post design was chosen for the main study primarily in view of the time-consuming data collection, treatment and analysis necessary for a multiple baseline design.

- **Subjects:**

  Subject selection criteria initially allowed for the inclusion of children attending formal pre-school for deaf signing children as well as children not attending pre-school prior to the intervention. It was identified that prior school attendance of children influenced caregiver communication and sign language outcome. Selection criteria were then modified to include children with no previous school attendance.

- **Data collection:**

  With regard to the materials used during play, a ball and play-dough were included in the pilot study but excluded in the main study. The ball encouraged a great deal of movement, which made videotaping a difficult task. Both the ball and play-dough appeared to result in minimal conversational interaction, which was important for the data of interest in the investigation.

  Technical details regarding filming were addressed in the pilot study and modified in the main study. The primary factors modified included seating arrangements of the

caregiver-child dyad and researcher, and lighting. Considerations in this regard are presented in section **4.5.3.1** of the Methodology.

The length of the 'warm-up' period prior to video-recording of the dyadic interactions was varied in the pilot study in view of possible variations in style and pace of interacting. Following introduction to the tasks and materials at hand, a 'warm-up' period of approximately 2 minutes was believed to be adequate.

- **Programme content and parameters of communication and sign language:**
  Modifications to the content of the communicative intervention programme contributed towards programme development. In particular, the parameters of communication and sign language, in terms of outcome measurement, were refined to meet the needs of hearing caregivers (of young deaf signing children) who have no previous exposure to formal intervention. The pilot study highlighted the need for an elementary-type programme. Consequently, several communication parameters received less attention following the pilot study. It is believed that a large comprehensive pool of parameters in the pilot study, as opposed to a small, incomprehensive pool, allowed for greater flexibility in the intervention study.

- **Programme implementation:**
  Modifications during the implementation of the programme primarily concerned group size and the length of sessions

The number of caregiver-child dyads was varied during the pilot phase in order to determine an optimal group size. On the basis of the pilot study and group sizes employed in previous intervention programmes for parents (e.g. The Hanen Program, Girolametto et al, 1986; Girolametto, 1988; The Hanen Centre), a maximum of 10 dyads per group was selected. This maximum was believed to be manageable during programme implementation primarily in view of an extrapolation of the number of referrals to the Centre at which the programme was to be implemented.

In the main, the length of the training sessions varied according to modifications in the programme content to be covered in 12 sessions, and factors relating to the caregivers (e.g. concentration). Twelve sessions of five-hour duration on a weekly basis were found to be adequate to allow for the particular programme content to be covered. A variety of activities during each session served to maintain the interest and attention of the caregivers, being suited to their learning styles. Activities included for example, group discussions, dyadic interactions, group sign language training, as well as a tea break

- **Treatment of Data:**

  The majority of the modifications made following the pilot study related to the treatment of the videotaped data. Refinements were made at all levels of treatment of the data in order to enhance the various procedures undertaken to prepare the data for analysis. These refinements were made in collaboration among the researcher and research personnel.

  The complexity of the coding system compiled by the researcher was highlighted in the training of personnel and the need identified for the involvement of the researcher in the treatment and analysis of the findings of communicative interaction. The importance of qualified speech-language therapists/audiologists treating the data was evident from the outset. These professionals know and understand the dynamics of language acquisition and development, and of communication transaction and interaction. It is believed that further refinement of the coding system would be necessary in order to validate a more user-friendly system. The number of coding parameters under investigation is likely to vary according to the particular aims of the researcher/professional. As is, coding procedures were time-consuming for the number of parameters investigated in this study.

APPENDIX 8: CORRELATION ANALYSIS - THE RELATIONSHIP BETWEEN THE FOUR COMPOSITE VARIABLES

With regard to the correlation between **after-before difference values**, each pair of difference values had non-zero correlation ($p < 0.01$). The correlation matrix is presented in Table (a)

Table (a): Spearman's Rank Correlation Matrix for After-Before Intervention Difference for the Composite Variables

Attention-getting	1	1.000			
Eye gaze	2	0.670 ($p < 0.005$)	1.000		
Cohesion illocutions	3	0.679 ($p < 0.004$)	0.753 ($p < 0.001$)	1.000	
Meaning illocutions	4	0.686 ($p < 0.003$)	0.631 ($p < 0.009$)	0.791 ($p < 0.000$)	1.000
		1 Attention getting	2 Eye gaze	3 Cohesion illocutions	4 Meaning illocutions

As depicted in Table (a), the attention-getting differences were strongly related to differences in each of the other three composite variables, and at about equal strength for each of these variables. This relationship suggests the importance of AG strategies as a pre-linguistic skill in sign language communication, as a means of directing the child's attention and sustaining conversational flow in interactions. In addition, Table (a) indicates that cohesion illocutions appeared even more strongly associated with eye gaze and more so with meaning illocutions. Of all the significant correlations, the weakest significant relationship was identified between meaning and eye gaze.

Figure (a) depicts the association between attention-getting and eye gaze on the basis of Pearson's correlation coefficient

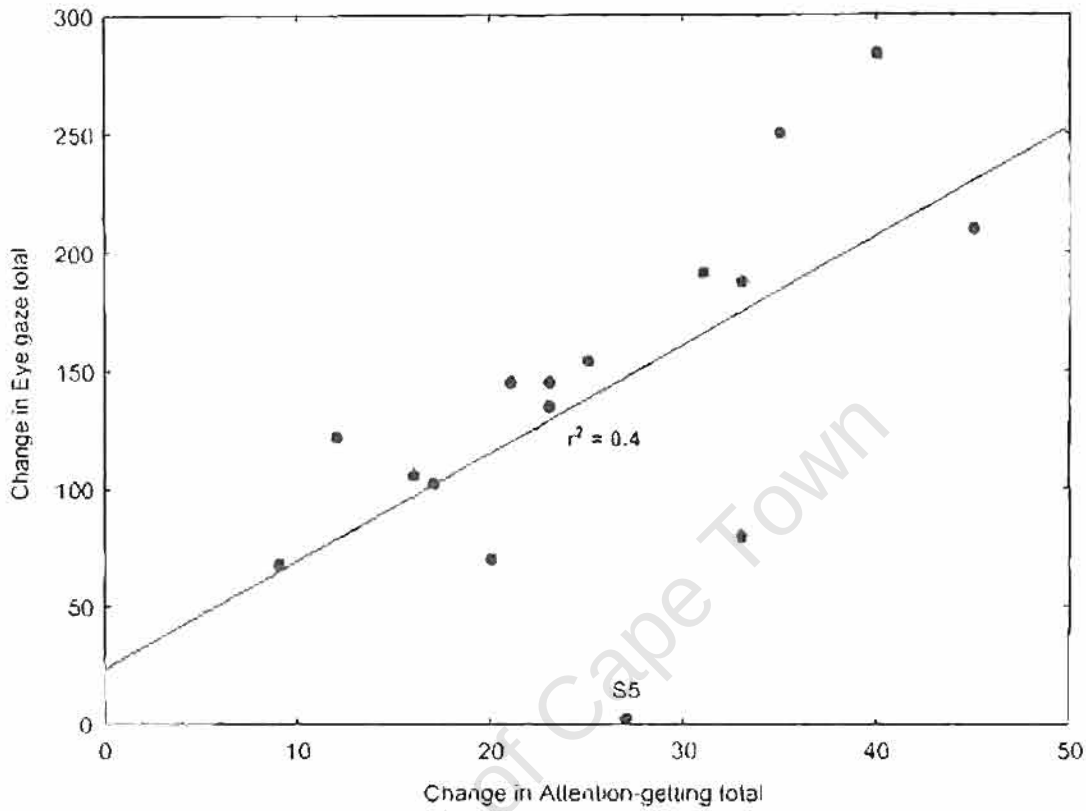


Figure (a): Scatter Diagram of Change in Attention-Getting and Change in Eye Gaze

As shown in Figure (a), change in use of successful AG strategies contributed 40% to the total variation in changes in eye gaze use. This finding suggests that as the caregivers interacted more with the children and the success of attention-getting increased, the caregivers became more visually attuned in the interactions. Thus, the need to elicit the child's attention may have been reduced as the caregiver and child became more visually attuned to one another and the caregivers were delivering a greater number of their communicative acts visually. The result for S5 depicted in Figure (a) reflects the small change in use of eye gaze for this grandmother following the intervention.

The strong associations between cohesion illocutions and eye gaze, and between cohesion and meaning illocutions on the basis of the Pearson's correlation coefficient, are depicted

in Figure (b). A value for Pearson R-square of 0.6 indicates that total change in meaning illocutions contributed 60% towards the total variation in change in cohesion illocutions on the difference scale. As indicated, the observed change in cohesion illocutions relative to change in meaning illocutions for S11 was in fact larger than predicted on the basis of the Pearson's correlation analysis. This finding is congruent with the result for S11 regarding the most improvement made in terms of use of interaction devices, relative to the group of caregivers.

A value for Pearson R-square of 0.7 as indicated in Figure (b) reveals that total change in eye gaze contributed 70% towards the total variation in change in cohesion illocutions on the difference scale for the 16 subjects.

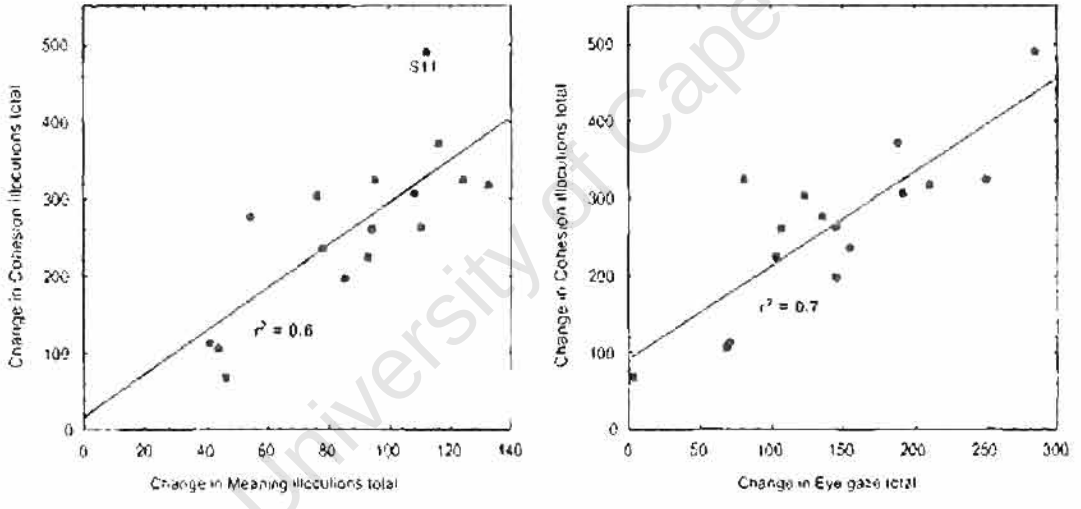


Figure (b): Scatter Diagrams of Change in Meaning Illocutions and in Eye Gaze that are Associated with Change in Cohesion Illocutions

The strong relationship between meaning and cohesion illocutions reflects the social nature of communication. Both serve as illocutionary acts having a particular communicative function. The association indicated in Figure (b) between meaning and cohesion illocutions reflects the importance of interaction that was conveyed in the intervention programme, rather than simply focusing on transaction.

The strong relationship between eye gaze and cohesion illocutions suggests that eye gaze is not only critical in its own right as a pre-linguistic skill but is important in interaction with profoundly deaf individuals in encouraging joint focus and visual attunement.

The correlation matrix for the **after/before logarithm ratios** is presented in Table (b). The logarithm ratios for attention-getting and for cohesion were both strongly related to the logarithm ratios for meaning. Furthermore, there was a moderate association between cohesion and both attention-getting and eye gaze.

Table (b): Spearman's Rank Correlation Matrix for After:Before Intervention Multiplicative Change for the Composite Variables

Attention-getting	1	**1.000**			
Eye gaze	2	0.162	1.000		
		(p= 0.549)			
Cohesion illocutions	3	0.498	0.551	1.000	
		(p=0.053)	(p=0.027)		
Meaning illocutions	4	0.762	0.108	0.731	1.000
		(p=0.001)	(p=0.246)	(p=0.001)	
		1	2	3	4
		Attention-getting	**Eye gaze**	**Cohesion illocutions**	**Meaning illocutions**

APPENDIX 9: STEPWISE REGRESSION ANALYSES – THE RELATIONSHIP BETWEEN THE FOUR COMPOSITE VARIABLES

(9a) Results of Analyses (i) and (ii) of Section 5.3.2 of Chapter Five:

Table (a), depicts the strong numerical evidence supporting additive change in eye gaze being strongly associated with change in cohesion, when meaning was excluded as a possible contributor to change. This is a positive finding in that the high correlation between changes in eye gaze and cohesion suggests that the caregivers became more visually attuned to the interaction as the caregivers and their children interacted meaningfully to a greater extent.

Table (a): Stepwise Regression Results of After-Before Cohesion Illocutions Change in Response to Additive Changes for Eye Gaze and Attention-Getting

Contributor Variable/s	Step	Multiple R	Multiple R-square	R-square change	F – to enter	p-level
Eye gaze	1	0.83	0.69	0.69	31.18	0.0001

No numerical evidence was obtained to infer that the composite attention-getting value – in addition to the composite eye gaze value – is necessary in order to explain the total variation in use of cohesion illocutions over the course of the intervention. This finding suggests that as eye gaze and the communicative interaction improves, increases in attention-getting are not as necessary but rather a visual orientation in interaction and visual attunement become important.

Table (b) indicates strong numerical evidence for change in attention getting contributing predominantly to change in meaning illocutions, when the composite of cohesion illocutions was excluded as a possible contributor. Change in attention-getting alone contributed 42% to additive change in meaning illocutions. Change in eye gaze over time contributed insignificantly to total variation in meaning illocutions, but together with attention-getting changes were able to predict 49% of total variation.

Table (b): Stepwise Regression Results of After-Before Meaning Illocutions Total Changes against Change for Eye Gaze and Attention-Getting Totals

Contributor Variable/s	Step	Multiple R	Multiple R-square	R-square change	F – to enter	p-level
Attention-getting	1	0.65	0.42	0.42	10.00	0.0069
Eye gaze	2	0.70	0.49	0.07	1.87	0.1952

It follows then that the composite variable of attention-getting is a major contributor of meaning illocutions change while the composite variable of eye gaze is a major contributor of cohesion illocutions change. This applies when the contributor link between meaning and cohesion illocutions is excluded.

(9b) Results of Analyses (iii) and (iv) of Section 5.3.2 of Chapter Five:
The following results were obtained when all other composite variables were included as possible contributors to change in the composite meaning and cohesion variables.

Table (c): Stepwise Regression Results for the Response Variable Change in Meaning Illocutions and the Explanatory Variables Change in Eye Gaze, Attention-Getting and Cohesion Illocutions

Meaning change: difference score						
	Step	Multiple R	Multiple R-square	R-square	F – to enter	p-level
Cohesion Illocutions	1	0.77	0.59	0.59	19.92	0.0005
Attention-getting	2	0.80	0.64	0.06	2.02	0.1789
Meaning change: log ratio of difference						
Cohesion Illocutions	1	0.70	0.49	0.49	13.22	0.0027
Attention-getting	2	0.85	0.72	0.24	11.25	0.0052
Eye gaze	3	0.86	0.75	0.02	1.01	0.3353

The regression analyses indicated that cohesion rather than attention-getting dominated meaning change. A change in meaning illocutions (transaction) was found to be well associated with a change in cohesion illocutions (interaction) alone, but furthermore, cohesion change was associated with underlying changes in attention and eye gaze. This latter finding suggests the importance of training caregivers in pre-linguistic skills and in interaction in first-time intervention programmes.

As depicted in Table (c), the strong correlation between cohesion and meaning implied that cohesion alone was able to predict 59% and 49% of total variation in meaning illocutions in terms of additive and multiplicative change respectively. Change in attention-getting alone contributed significantly to overall multiplicative but not overall additive change in meaning illocutions. Hence, AG strategies are necessary in bringing about change in communicative transaction (meaning illocutions). Since the composite attention-getting was reflected as a constituent of the composite meaning illocutions, as attention directives, this may be inferred as the reason for the association. This inference may arise as an artefact of the construction of attention-getting rather than from a causal or predictive relationship with meaning illocutions.

Table (d): Stepwise Regression Results for Change in the Response Variable Cohesion Illocutions and Change in the Explanatory Variables of Eye Gaze, Attention-Getting and Meaning Illocutions

Cohesion change: difference score						
	Step	**Multiple R**	**Multiple R-square**	**R-square change**	**F – to enter**	**p-level**
Eye gaze	1	0.83	0.69	0.69	31.18	0.0001
Meaning illocutions	2	0.89	0.79	0.10	6.47	0.0245
Cohesion change: logarithm of ratio						
Meaning illocutions	1	0.65	0.42	0.42	10.11	0.0067
Eye gaze	2	0.83	0.69	0.27	11.57	0.0047

On the basis of stepwise regression analysis, change in eye gaze dominated additive cohesion change while change in meaning illocutions dominated multiplicative cohesion change. As shown in Table (d) eye gaze alone contributed 60% to total variation in change in cohesion illocutions, and meaning illocutions cannot be disregarded in explaining change in the composite cohesion value. Similarly, changes in both eye gaze and meaning illocutions were identified as necessary in explaining multiplicative cohesion change. However, the stronger correlation between meaning and cohesion implied that meaning change contributed more to the total variation than did eye gaze change.

(9c) Results of Analysis (v) of Section 5.3.2 of Chapter Five:

Eye gaze change rather than changes in attention-getting or meaning illocutions, dominated change over time in the combined difference values for meaning and cohesion. That is, eye gaze was the major contributor towards change in meaning/transaction and cohesion/interaction as a whole. The stepwise regression results are presented in Table (e).

Table (e): Stepwise Regression Results for Change in the Response Variables of Meaning and Cohesion Illocutions against Changes in the Explanatory Variables of Eye Gaze and Attention-Getting

Contributor Variable	Step	Multiple R	Multiple R-square	R-square change	F – to enter	p-level
Eye gaze	1	0.62	0.6[illegible]	0.6[illegible]	28.32	0.0001

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